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Dissertation on

"PSYCHIATRIC MORBIDITY IN PATIENTS WITH CHRONIC KIDNEY DISEASE: A CROSS SECTIONAL STUDY",

SUBMITTED FOR M.D. DEGREE EXAMINATIONS

BRANCH – XVIII

(PSYCHIATRY)

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BONAFIDE CERTIFICATE

This to certify that the Dissertation entitled "**PSYCHIATRIC MORBIDITY IN PATIENTS WITH CHRONIC KIDNEY DISEASE: A CROSS SECTIONAL STUDY**", is a bonafide record of work done by Dr. M. Tamilselvi in the department of Psychiatry, Government Kilpauk Medical College, Chennai, during her Post Graduate Course from 2015 to 2018. This is submitted as partial fulfilment for the requirement of M.D. Degree examinations – Branch – XVIII (Psychiatry) to be held in **May 2018**.

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DECLARATION

I, Dr. M. Tamilselvi, solemnly declare that the dissertation titled "**PSYCHIATRIC MORBIDITY IN PATIENTS WITH CHRONIC KIDNEY DISEASE: A CROSS SECTIONAL STUDY**" is a bonafide work done by me in Government Kilpauk Medical College, Chennai, during March 2017 – August 2017 under the guidance and supervision of Professor **Dr M. Malaiappan, MD (Psychiatry)**.

This dissertation is submitted to "**The Tamilnadu Dr M.G.R. Medical University, Chennai**", Tamilnadu as a partial fulfillment for the requirement of **M.D.** Degree examinations – Branch – XVIII (Psychiatry) to be held in **May 2018.**

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INSTITUTIONAL ETHICS COMMITTEE
GOVT. KILPAUK MEDICAL COLLEGE,
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CERTIFICATE OF APPROVAL

The Institutional Ethical Committee of Govt. Kilpauk Medical College, Chennai reviewed and discussed the application for approval "**Psychiatric morbidity in patients with chronic kidney disease: a cross sectional study**" submitted by Dr.M.Tamilselvi, Postgraduate in Psychiatry, Govt. Kilpauk Medical College, Chennai.

The Proposal is APPROVED.

The Institutional Ethical Committee expects to be informed about the progress of the study any Adverse Drug Reaction Occurring in the Course of the study any change in the protocol and patient information /informed consent and asks to be provided a copy of the final report.

17/1/17

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CERTIFICATE - II

This is to certify that this dissertation work titled "**PSYCHIATRIC MORBIDITY IN PATIENTS WITH CHRONIC KIDNEY DISEASE: A CROSS SECTIONAL STUDY"** of the candidate **Dr. TAMILSELVI . M** with registration Number **201528352** for the award of **M.D** in the branch of **PSYCHIATRIC MEDICINE**. I personally verified the urkund.com website for the purpose of plagiarism Check. I found that the uploaded thesis file contains from introduction to conclusion pages and result shows **6 Percentage** of plagiarism in the dissertation.

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ABBREVIATIONS

ADS	:	Alcohol Dependence Syndrome
AKI	:	Acute Kidney Injury
BDI	:	Beck Depression Inventory
CAPD	:	Continuous Ambulatory Peritoneal Dialysis
CKD	:	Chronic Kidney Disease
CVA	:	Cerebro Vascular Accident
DM	:	Diabetes Mellitus
ESRD	:	End Stage Renal Disease
GBD	:	Global Burden of Disease
GFR	:	Glomerular Filtration Rate
HAM-A	:	Hamilton rating scale for Anxiety
HAM-D	:	Hamilton rating scale for Depression
HD	:	Haemodialysis
ICD	:	International Classification of Disease
IL	:	Interleukin
KPS	:	Karnofsky Performance Status Scale
MDD	:	Major Depressive Disorder
MDRD	:	Modification of Diet in Renal Disease
MMAS	:	Morisky’s Medication Adherence Scale
MOCA	:	Montreal Cognitive Assessment
MSPSS	:	Multidimensional Scale of Perceived Social Support

NKF-KDOQI	:	National Kidney Foundation – Kidney Disease Outcome Quality Initiative
PD	:	Peritoneal Dialysis
SADQ	:	Severity of Alcohol Dependence Questionnaire
SCID	:	Structured Clinical Interview for DSM
TNF	:	Tumour Necrosis Factor

INTRODUCTION

INTRODUCTION

Patients with chronic medical conditions often have to adjust their aspirations, lifestyle, and employment. Many grieve about their predicament before adjusting to it. But others have protracted distress and may develop psychiatric disorders, most commonly depression or anxiety. In studies with cancer patients, affective disorder exceeds 30%, and with rheumatoid arthritis, Diabetes it is between 20% and 25%, with myocardial infarction 40% - 65%, with cerebrovascular accident (CVA) 10% - 27 %.(Jane Turner et al. ,2000)

Community-based epidemiological studies conducted in India on mental and behavioral disorders report varying prevalence rates, ranging from 9.5 to 102 per 1000 population.(Suresh Bada Math et al. ,2010)

Chronic kidney disease (CKD)

(1) CKD is emerging to be an important chronic disease globally. 10% of the population worldwide is affected by CKD (World Kidney Day: Chronic kidney Disease. 2015). According to 2010 Global Burden of Disease study, CKD was ranked 27th in the list of causes of total number of deaths worldwide in 1990, but rose to 18th in 2010. Over 2 million people

worldwide currently receive treatment with dialysis or kidney transplant (Jha V et al., 2013).

In India, it is estimated that prevalence of CKD is around 15 -20%. Prevalence of CKD stages 1,2,3,4 and 5 was 7%, 4.3%, 4.3%, 0.8% and 0.8% respectively (Singh A K et al., 2013).

Chronic kidney disease is a multifaceted problem having both physical and psychological disturbances for the patient. CKD patients are dependent on procedures and a group of qualified medical professionals for the rest of his/her life. CKD, as a medical condition has such a degree of dependence for the maintenance treatment. (Vikram Ramasubramanian et al., 2015) There is also a considerable restraint on the selection of foods and fluids. Patients with renal failure often suffer from many other medical conditions and are on many different medications. All these factors play an important role in the emergence of various psychiatric morbidities in CKD patients (A De Sousa et al., 2008)

In previous studies, the mental disorders frequently observed in CKD patients are affective disorders, particularly depression, organic brain diseases (delirium and dementia), substance use disorders, anxiety etc. Depression is an independent factor for non-adherence in patients on maintenance dialysis and suicide is highly linked with depressed state. In previous studies, prevalence of

psychiatric illness has been found to be about 32% - 40% in CKD patients (Soykan A et al., 2004). Among psychiatric illness depression ranges from 6.5% to 63%, anxiety disorder 30%, somatoform disorder 32.5% (Mathew A et al.,). Prevalence of anxiety disorders in post renal transplantation ranges between 10% to 70% (Fukunishi et al., 2001)

Need of the study

CKD patients are undergoing tremendous physical, psychological, emotional and financial stress of high order. This may lead to negative outlook in these patients, because of dependency and disability. Psychiatric comorbidity in CKD is an important factor in determining the treatment outcome as it is associated with poor adherence. So it becomes important to evaluate the prevalence and severity of psychiatric disorders in people with CKD. Proper identification and treatment of psychiatric comorbidity will help improve treatment adherence, quality of life and illness outcome.

AIM AND OBJECTIVES

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- To estimate the prevalence of psychiatric morbidity in patients with chronic kidney disease
- To study the nature and severity of psychiatric manifestations in patients with CKD, on conservative treatment, on hemodialysis, and on renal transplantation.
- To study the role of support systems, functional level, treatment adherence in relation to psychiatric illness.

REVIEW OF LITERATURE

REVIEW OF LITERATURE

Chronic kidney disease

Worldwide, an estimated 200 million people have chronic kidney disease. On global level, the burden of CKD continues to increase. 10% of the population worldwide is affected by CKD, and millions die each year because they do not have access to affordable treatment. Moreover, kidney diseases are projected to grow further due to many factors, including the aging general population and the growing prevalence of diabetes. In people aged 65 through 74 worldwide, it is estimated that one in five men, and one in four women, have CKD. Importantly, CKD also has a strong impact on morbidity and non fatal outcomes. Among over 300 causes accounted for in global burden of diseases (GBD) Study, CKD is the 15^{th} and 20^{th} leading cause of years lived with disability and disability adjusted life years (Abubecker et al., 2015).

It is estimated that number of cases of CKD will increase disproportionately in developing countries, such as India, where the number of elderly people are increasing. (Jha V et al., 2013) The health care costs and economic burden of CKD are huge and not sustainable in developing countries. In India, it is estimated that prevalence of CKD is around 15 -20%. Prevalence of

CKD stages 1,2,3,4 and 5 was 7%, 4.3%, 4.3%, 0.8% and 0.8% respectively (Singh A K et al., 2013).

Chronic Kidney Disease (CKD) refers to kidney damage or reduced kidney function which has persisted for a minimum period of 3 months (KDOQI, 2002).

Definition criteria

1) Kidney damage for $\geq$ 3 months, as defined by structural or functional abnormalities of the kidney, with or without decreased GFR, manifest by either:

- Pathological abnormalities; or
- Markers of kidney damage, including abnormalities in the composition of the blood or urine, or abnormalities in imaging tests

2) GFR < 60mL/min/1.73m^2 for $\geq$ 3 months, with or without kidney damage.

Kidney damage can be identified by renal biopsy, imaging the kidney (looking for structural abnormalities), or more typically via the detection of markers of kidney damage in the blood, such as the concentrations of urea and creatinine, and in the urine, such as the presence of blood and protein. Proteinuria is the presence of significant amounts of proteins such as albumin in the urine (albuminuria), and is regarded as a prominent marker of kidney damage .(Keane et al., 1999)

The best overall measure of kidney function is glomerular filtration rate (GFR)(Smith et al., 1951). GFR is defined as the volume of fluid filtered from the glomerular capillaries into the Bowman's capsule per unit of time (mL/min/1.73m2). GFR is dependent upon several factors including age, sex and body size. A GFR of 120-130 mL/min/1.73m^2 is considered normal in healthy adults, though this declines with age (Rowe et al., 1976; Smith et al., 1951). The gold-standard measure of GFR is Inulin clearance which involves an intravenous infusion and precisely timed urine collections. Inulin is a small molecule that is easily filtered through the glomeruli with no re-absorption in the renal tubules. However, Inulin clearance is rarely used in clinical practice because it is time consuming and costly.

Creatinine clearance is another method of estimating GFR, which is more applicable to clinical practice. This requires a 24 hour urine collection and an estimate of creatinine concentration in the serum. Creatinine is a small molecule resulting from the metabolic break down of creatine phosphate found in muscle. Creatinine is a middle sized molecule freely filtered by the glomerulus, with little re-absorption in the renal tubules. Elevated levels of serum creatinine (>120 μmol/l) suggest renal impairment. Serum creatinine affected by factors other than GFR, such as muscle bulk and protein intake, thus there is variation of serum creatinine both in patients with normal and impaired kidney function. Furthermore serum creatinine concentration does not rise out of the normal range until around 50% of GFR is lost. Hence serum creatinine alone is insufficient to determine the severity of kidney function. In addition, creatinine clearance estimations generally overestimate GFR due to tubular secretion of creatinine. Variation of laboratory techniques for creatinine estimation, and inaccurate 24 hour urine collections are additional problems with this methodology. As a result of these issues, estimates of GFR are commonly used in clinical practice. These are derived from predictive equations. The two most common equations are; the Cockcroft-Gault equation (Cockcroft & Gault, 1976) and the Modification of Diet in Renal Disease (MDRD) study equation (Levey et al., 1999), which are defined below:

Cockcroft-Gault equation: Creatinine Clearance (mL/min) = ([140 – Age X Weight] / [72 X Serum Creatinine]) X (0.85 if female)

MDRD equation: eGFR (ml/min/1.73m2) = 186 X [Serum Creatinine] -1.154 X [Age] -0.203 X [0.742 if female] X [1.21 if black].

where eGFR is estimated GFR, age is measured in years, weight in kg, serum creatinine in mg/dL.

Renal failure can follow either an acute or chronic course. Acute Kidney Injury (AKI) is the loss of renal function in a setting in which the loss is potentially reversible. The onset of AKI is usually sudden with a time course of hours or days. CKD is the progressive deterioration of renal function resulting in irreversible kidney damage.

Stages of CKD

Stage	Description	GFR (mL/min/1.73 m2)
1	Kidney damage with normal or increased GFR	≥ 90
2	Kidney damage with mild reduction in GFR	89 – 60
3	Moderate reduction in GFR	59 – 30
4	Severe reduction in GFR	29 – 15
5	End stage renal disease	< 15

Etiology

Causes of CKD include

- Diabetes is the most common cause of CKD (USRDS, 2003). Indeed, the rise in CKD prevalence rates over the past 10 years is partially attributable to the growing incidence of diabetes (USRDS, 2003).
- Hypertension

- Vascular diseases (eg- renal artery stenosis, vasculities, atheroemboli, renal artery thrombosis)
- Glomerular disease(primary or secondary)
- Tubulointerstitial disease
- Cystic kidney diseases
- Obstructive nephropathy
- Renal stone diseases
- Congenital defects of kidney or bladder
- Unrecovered acute kidney injury

The consequences of CKD

Early stages of renal impairment may be asymptomatic. Various “uraemic” symptoms can result from severe renal failure, though this is difficult to define in purely biochemical terms. Data from the Third National Health and Nutrition Examination Survey (NHANES III) demonstrated a decline in Hb with falling eGFR. Dietary limitations are required to maintain adequate potassium levels, often involving specialist advice from renal dieticians. Similarly, phosphate control is regulated by dietary control and the ingestion of phosphate binder medications.

Indications for renal replacement therapy in CKD

- Severe metabolic acidosis
- Encephalopathy
- Hyperkalemia
- Pericarditis
- Intractable volume overload
- Intractable gastrointestinal symptoms
- In asymptomatic patients, a GFR of less than 10 ml/min/m^2

Renal replacement therapy in CKD

Hemodialysis (HD)

The blood and the dialysis fluid are pumped through the dialyzer in a countercurrent fashion to maximize concentration gradients. HD works by the principles of convection and diffusion. Waste products are mainly removed by diffusion down the concentration gradient between the blood and the dialysis fluid. The composition of the dialysis fluid is devised to optimize the removal of toxins and excess minerals and electrolytes, such as potassium and magnesium, prevent excess removal of sodium, and to allow acidosis to be corrected by infusion of bicarbonate. Fluid is sucked from the blood into the dialysis fluid by

convection, brought about by application of a negative pressure to the dialysis fluid side of the membrane. Convection also facilitates the removal of middle molecules. Haemodialysis can take place in-centre, in minimal care units or in the home. In centre based therapy, nurses or health care assistants undertake most of the work associated with the treatment. In-centre treatment is by far the most common current means of dialysis delivery.

Peritoneal Dialysis (PD)

Peritoneal dialysis removes metabolic end products and fluid from the body via a naturally occurring semi-permeable membrane. This refers to the peritoneal membrane which lines the peritoneal cavity and surrounds the intestine. PD requires the insertion of a peritoneal catheter into the patient's abdomen. Dialysis fluid is then introduced into the peritoneal cavity. The same principles of diffusion and convection as described above also operate in peritoneal dialysis, except that convection now occurs down an osmotic gradient created by high concentrations of glucose in the dialysis fluid. Continuous ambulatory peritoneal dialysis (CAPD) is typically conducted throughout the day and involves four dialysis exchanges. Automated Peritoneal Dialysis involves the patient dialyzing at night, with a machine managing the exchanges over an 8-10 hour period. The self-care aspect associated with PD tends to mean that this modality is generally

suited to younger patients with less comorbidity, though older independent patients may also do well on this modality (Brown et al., 1999; Brown et al. , 2010). Of the potential complications associated with PD peritoneal infection is a prominent concern. It usually responds to antibiotics but in rare cases may be fatal.

Renal transplantation

Transplantation Renal transplantation is the preferred treatment for end stage renal disease (ESRD), though only minorities of patients are suitable. This reflects the increasing age and co-morbid load of the ESRD population. A successful transplant often reverses some of the complications induced by kidney failure, including anemia and infertility. Furthermore, the need for tight dietary and fluid restriction is no longer required. Transplantation involves the donation of a kidney either from a living related donor or a “brainstem dead” donor (cadaveric). The benefits of renal transplantation are well established, improving both survival and quality of life. However the demand for donor kidneys outweighs the supply, which prolongs patient’s reliance upon dialysis therapies. Successful transplantation generally relies upon matching blood group antigens, though exceptions are increasingly common. HLA matching may improve outcomes but mismatching is generally not a barrier. Following a transplant,

immunosuppressive medication is required. Advances in this regard have led to transplanted kidney surviving longer, with around 50% lasting 10 years or more.

CKD and psychiatric illness

The psychiatric disorders associated with kidney disease take many forms, depending on the natural history of disease. As in every chronic condition, patient with chronic kidney disease may suffer from limited functional capacity, impaired productivity, and reduced quality of life. Psychiatric disorders are highly prevalent in patients with CKD. Kimmel et al reported that chronic kidney disease patients had to be hospitalized for psychiatric disorders 1.5 to three times more than individuals with other chronic diseases.

The psychiatric manifestations of renal failure were described by Addison in 1868 in his classic monograph on renal disease.(J Donovan et al,.1971) He wrote that these patients manifested ‘a dullness of the intellect, sluggishness of manner, drowsiness going on to quiet stupor and ending in coma’. Schreiner(1959) and Tyler(1965) agree that the commonest initial complaints of the uremic patient are fatigue, drowsiness and inability to concentrate for long periods. Schreiner comments that delirious psychosis may arise even in the early stages of alteration of consciousness but increase in frequency occurs along with deterioration of the general mental state.

The relationship between depression and physical illness is highly intimate. It is evident that depression and other psychiatric symptoms are implicated in both the etiology and consequence of physical illness. Co-morbid depression has profound effects upon morbidity, mortality, self-care behaviour and health care costs in patients with chronic physical disease (Stein et al., 2006). At any given time it is thought that 2 to 4% of the general population suffers from depression, rising to between 5 and 10% in primary care (Kessler et al., 2003). Among patients with CKD the reported point prevalence of depression or significant depressive symptoms is estimated to be between 20-30% (Cukor et al., 2008; Drayer et al. , 2006; Kimmel et al. , 2005). However, the use of different depression assessment tools has lead to wide variation in estimated prevalence rates (Craven et al., 1987; Craven et al., 1988; Smith et al., 1985). Furthermore, there are discrepancies in prevalence estimates between patients receiving various treatment modalities, although methodological factors may contribute to this mixed evidence. Despite this depression is thought to be the most common psychopathology encountered in chronic kidney disease patients, the under recognition of which in day-to-day clinical practice is of considerable concern (Wang et al., 2004). This concern is exacerbated by the growing body of empirical evidence identifying the adverse consequences of depression on clinical outcome in CKD patients.

Prevalence of depression and depressive symptoms in CKD

The montage of research in the area suggests that depression accounts for around 50% of the psychopathology encountered in chronic physical illness. As in patients with CKD the estimated prevalence of depression among patients with other physical illnesses is varied, and depends on the definition of depression employed and the type of depression measurement administered (Meakin et al., 1992). As a consequence, estimates of the prevalence of depression range between 15 and 61%, among the medically ill (Martucci et al., 1999). As stated previously, screening approaches generally inflate estimations compared to diagnostic assessments. For example, Smith et al (1985) compared three depression assessments among patient with ESRD, reporting varying prevalence rates across the assessments. When using the BDI (cut-off >11), 47% had significant symptomatology, compared to 17% when using the Multiple Affect Adjective Checklist and 5% after a professional diagnostic evaluation. In a recent study of ESRD patients treated with haemodialysis and peritoneal dialysis (n=128), 45.3% had a BDI≥14, while no differences between treatment modalities were apparent (Simic Ogrizovic et al., 2009). Investigations employing diagnostic criteria among ESRD patients generally reveal lower estimates of depressive disorder, yet there is still variation across studies.

A large epidemiology study reports that ESRD was associated with nearly a fourfold increase in depression prevalence as compared to healthy individuals (Egede et al., 2007). Moreover as is common in patients with ESRD, only 12% of the patients assessed were receiving treatment for depression or anxiety disorders (Cukor et al., 2007). Grant et al (2008) revealed a 12.3% prevalence rate after applying ICD- 10 classification for depression to 57 HD patients. Others report a 17.3-19% prevalence of major depressive disorder (MDD) in HD patients (Hedayati et al. , 2006; Watnick et al., 2005). Depression was found to be constant across CKD stages, with 21% of the sample meeting the criteria for MDD. Despite this limitation and the paucity of research in CKD, depression may be a prevalent psychopathology in early stages of kidney disease.

The course of Depression in CKD

A recent longitudinal study of HD patients, reports a 29% prevalence rate for depressive disorder using the Structured Clinical Interview for DSM (SCID) at baseline assessment (Cukor et al., 2008). Interestingly, 43% of patients diagnosed with depressive disorder at baseline, still satisfied the criteria 16 months later. A persistent depressive course was associated with reduced perceived health status and quality of life and a depressive history (Cukor et al., 2008). These results may imply that depression is relatively stable over time in ESRD patients. Although

this study had a relatively small sample size, it provides insight into the course of depression over time among CKD patients.

The impact of depression in CKD

The impact of depression upon health related outcome is tangible. In a recent study of HD patients, depression symptoms were associated with significantly more hospital admissions and emergency department visits (Tavallaiiet al., 2009). In the general population depression is associated with increased mortality risk (Wulsinet al., 1999), although methodological issues confound certain studies. A recent study investigated the impact of depression and anxiety symptoms using the Hospital Anxiety and Depression Scale upon mortality in a large population survey (Mykletun et al., 2009). In a comprehensive analysis, the authors were able to demonstrate a significant effect of depressive symptoms upon survival after controlling for several factors including somatic conditions, physical activity and smoking status (OR=1.37, 95% CI 1.19 to 1.58). 29 Interestingly the adjustment of somatic conditions led to an attenuation of the depression mortality association. Physical illness is therefore an important confound in this context, and suggests further the intimate relationship between depression and physical illness.

Cardiovascular disease (CVD) is a prominent co-morbidity among the dialysis population and one of the largest contributors of mortality. There is also a comprehensive literature linking depression with CVD (Steptoeet al., 2007). Pro-inflammatory cytokines appear to be heightened in CKD patients and predict mortality (Kimmelet al., 1998). There is evidence that depression is associated with these cytokines including IL- 6, IL-1β and TNF-α and CRP in both the general and ESRD populations (Appelset al., 2000; Kop et al. , 2002; Simic Ogrizovic et al. , 2009; Suarez et al., 2003). In a recent study, CKD patients with a BDI≥14 had significantly higher IL-6 and hsCRP as compared to those with a BDI less than 14. Recently the association between a formal diagnosis of clinical depression and mortality has been established (Hedayati et al., 2008). Ninety eight HD patients were assessed using the SCID, which identified 26 as suffering from depressive disorder. Differences between the depressed (as diagnosed via the SCID) and non-depressed revealed a greater prevalence of co-morbidity in the depressed. In multivariate analysis after controlling for age, ethnicity, gender, time of dialysis and co-morbidity, a diagnosis of depression was significantly associated with mortality. Interestingly, self-report measures were not significant predictors of mortality in sub-analysis. In summary there is considerable evidence regarding the association between depression and mortality in CKD patients. While further research is required to better understand this relationship, it is also

important to establish the utility of treating depression upon patient outcome of which the current evidence is mixed (Detweiler-Bedellet al., 2008).

Depression and Non-Adherence in CKD

Depression may be associated with increased health care costs and mortality due to decreased treatment adherence in these patients (DiMatteo et al.,2000). A meta-analysis of depression and medical treatment non-adherence suggests that depression increases the odds of non-adherence 3 fold (odds ratio 3.3, 95%CI 1.96 to 4.89, DiMatteo et al., 2000). Interestingly analysis of six ESRD studies were reported in this metaanalysis, revealing a standardized odds ratio of 3.44 (95% CI 1.26-8.1, p=0.008) for nonadherence in depressed patients. Critically however, this analysis did not weight the effect size for methodological strengths for each study reported. A recent review of the literature evaluated the association between depression and non-adherence more cautiously (Raynor et al., 2006). Indeed, while 37% of the studies reviewed (n=41), report a significant negative association, a similar number reported that depression was related to some aspects of non-adherent behaviour but not all. These findings highlight the complexity of adherence and show that predictors may only partially explain one aspect of what are often demanding and multifaceted treatment regimes. Furthermore measuring adherence in the CKD is a particular issue due to several

clinical confounders (Leggat et al., 1998). Kimmel et al (1998) suggest investigating behavioural non-adherence relating to the 32 dialysis treatment (i.e. shortening dialysis time and skipping dialysis sessions). They demonstrated that depression symptoms were associated with behavioural nonadherence, and that non-adherence predicted mortality. However in this particular analysis they failed to find any association between depression symptoms and mortality. Recently the influence of depressive symptoms upon medication adherence in both CKD and kidney transplantation patients has been investigated (Cukor et al., 2009). The results showed that depressive symptomatology added significantly to the explained variation of medication adherence in both CKD and transplant patients. Given this, it may be hypothesised that treating depression in CKD patients would improve patient adherence.

Anxiety in CKD

Anxiety is also commonly seen in CKD patients. Cukor et al (2008) reported that 45.7% of a group of dialysis patients met criteria for an anxiety disorder. The most prevalent disorders were specific phobias (26.6%) and panic disorder (21%). Bossola et al.(2010) indicated that 47.5% of 80 HD patients had symptoms of anxiety. In addition, the anxiety scores correlated significantly with age and comorbidities, and anxiety were commonly noted in patients with poor appetite

(Bossola et al., 2010). In a study by Chen et al., (2010), 21% of dialysis patients had symptoms of anxiety. In addition, 15.5% of these patients had comorbid depression and anxiety, and 44% of depressed patients had comorbid anxiety.

Suicide in CKD

Suicide may be the most serious result of mental illness among CKD patients. Kurella et al(2005) reported the death rate from suicide was 0.24% in HD patients. Chen et al., (2010) demonstrated that among 200 patients with HD, 21.5% had suicidal ideation; 3.5% had planned a suicide attempt in prior months; and 3.5% had attempted suicide during their lifetime. Suicide was associated with several demographic characteristics among HD patients. Independent predictors of suicide included old age, male gender, lower educational status, alcohol or drug dependence, and recent hospitalization for mental illness (Keskin et al., 2011; Kurela et al., 2005). Suicide risk was also significantly predicted by depression and anxiety. Because suicide might be preventable via early detection of warning signs, it is crucial to identify the psychological impact and possible risk of suicide among dialysis patients.

Cognitive alterations in CKD

Cognitive deficits in patients with chronic kidney disease are common but poorly recognized. The identification of deficits may have a positive impact on patient outcome, especially when they are secondary to depression or delirium, potentially treatable conditions that must be considered in the differential diagnosis of cognitive impairment(Kurella Tamura M et al.,2011). Alzheimer's and vascular dementia in particular are commonly seen in patients with CKD, the latter due to comorbidites with hypertension, diabetes and atherosclerosis. Dementia has been associated with greater levels of disability, more deaths and hospitalizations and interruption of dialysis (Kurella Tamura M et al., 2011).

Patients on dialysis for more than a year may suffer from a progressive neurological syndrome called 'dialysis dementis', characterized by dysarthria, dysphagia, and global dementia with preservation of the level of consciousness. Individuals with dialysis dementia may die within 6 -12 months if not treated properly. The most widely accepted pathophysiology of dialysis dementia revolves around toxicity of the aluminum salts found in dialysis fluids. The introduction of preventive measures (discontinuation of the use of aluminum salts in dialysis fluids and phosphate binders containing aluminum) led to a significant reduction in the number of cases (Wyszynski A A et al., 2008).

Delirium

Delirium is an acute behavioural disturbance caused by brain dysfunction, leading to cognitive impairment usually secondary to a systemic disorder. It is characterized by abrupt onset, altered level of consciousness, attention deficits, temporal/spatial disorientation, disorganized thinking, and fluctuation of symptoms throughout the day. Many are the precipitating factors for delirium in renal failure. They include fever, hemodynamic instability, polypharmacy, hypo/hypernatremia, acid-base imbalance, hypercalcemia, hypo/hyperglycemia, anemia and vitamins deficiency. However, in patients with renal failure, some specific cause must be considered such as uremia, aluminium toxicity, subdural hematoma (associated with platelet dysfunction and anticoagulants), and dialysis disequilibrium syndrome (Polycarpou et al., 2007).

Dialysis disequilibrium syndrome is caused by a sudden correction in azotemia and a consequent change in pH and oscmotic pressure, which produce a pressure gradient between the central nervous system and plasma, leading to cerebral edema. Dialysis disequilibrium syndrome may set in 3 - 4 hrs after the start of dialysis and may last for 8 – 48 hours after the end of dialysis. It is a transient condition characterized by headaches, nausea, cramps, delirium, epileptic seizures and coma.

Early detection of delirium is of paramount importance and treatment must be individualized for each patient. Prevention is the first step when it comes to dealing with delirium. This can be done by identifying and treating predisposing factors and with early patient immobilization. There is no evidence to support the use of drugs in the prevention of delirium.

Uremic encephalopathy

Uremia is described as a clinical syndrome associated with renal failure and accumulation of nitrogen compounds. However, no specific substance has been implicated to date. Factors such as hormonal disorders, oxidative stress, accumulation of metabolites (such as guanidine compounds, kynurenine pathway metabolites), imbalance between excitatory and inhibitory neurotransmitters, and disorders of intermediary metabolism have been identified as possible contributing factors. Uremic encephalopathy is more severe and progresses more rapidly in patients with acute deterioration of renal function.

In addition to the symptoms present in delirium, in uremic encephalopathy symptoms may progress along a continuum, from mildly altered levels of consciousness to deep coma. Headache, visual disturbances, tremor, multifocal myoclonus, and epileptic seizures are frequently present. Clinical signs also fluctuate over hours or days. Patients may experience progressive cognitive

impairment. However, levels of azotemia (nitrogen compounds) have been poorly correlated with neurological disorders. Most symptoms resolve with dialysis or transplantation (Brouns R et al., 2004)

MATERIALS AND METHODS

METHODOLOGY

- Study design
    - Cross sectional study
- Study place
    - Department of Nephrology, Kilpauk Medical College
- Duration of study
    - 6 months

Sample size calculation

N=4pq/d*d

N- total sample size, p – prevalence, q – 100-prevalence, d-precision

P = 40% (prevalence of psychiatric illness in CKD)

absolute precision = 10%

Calculation: 4 x (0.40 x 0.60) / (0.1 x 0.1) = 96

Assuming 10 % non-response = 96 + 10 = 106.

Inclusion criteria

Patients diagnosed to have Chronic Kidney Disease by Consultant Nephrologist and on various treatment modalities (conservative treatment, hemodialysis, renal transplantation) in department of Nephrology, Kilpauk Medical College Hospital.

Age between 18 – 60 years

Given consent for the study

Exclusion criteria

Patients diagnosed to have mental illness prior to the onset of CKD

Refused to give consent to the study

MATERIALS AND METHODS

A total of 110 consecutive patients getting various treatments (conservative treatment, hemodialysis, renal transplantation) at nephrology department in Govt. Kilpauk Medical College, fulfilling the inclusion and exclusion criteria were selected for this study. Informed consent was obtained from those willing to participate. A semi structured socio demographic proforma (Name, age, hospital no., gender, education, occupation, family income per month, marital status, type of family) and Kuppuswamy socioeconomic status scale were applied to the participants. Information regarding disease related factors like age at renal disease diagnosis, underlying cause of renal failure, renal failure stage, mode of treatment receiving, duration of treatment, co-morbid medical illness and family history of psychiatric illness also collected. Symptom Check List 90 was used to screen for psychiatric disorders, ICD 10 guidelines used for diagnosis of psychiatric disorders, Hamilton Depression rating scale and Hamilton Anxiety rating scale used for assessing the severity of depressive and anxiety disorders respectively. Severity of alcohol dependence questionnaire score was used to assess the severity of alcohol dependence. Montreal cognitive assessment was used for assessing cognitive functions. Multidimensional scale of perceived social support system, Karnofsky performance scale were also applied for assessing the support system, functional ability respectively.

Ethical approval

Ethical approval for the study was obtained from the Ethics committee, Government Kilpauk Medical College, Chennai.

Tools used

1) A semi structured socio demographic proforma (Name, age, hospital no., gender, education, occupation, family income per month, marital status, type of family).

2) Kuppuswamy socioeconomic status scale

3) Symptom checklist – 90 – to screen the patients

4) ICD – 10 clinical and diagnostic guidelines – to confirm the diagnosis

5) HAM-D – to assess depression severity

6) HAM – A – to assess anxiety severity

7) Severity of Alcohol Dependence Questionnaire (SADQ) – to assess Alcohol dependence severity

8) Montreal Cognitive Assessment (MOCA) – to assess cognitive functions.

9) Multidimensional Scale of Perceived Social Support – to assess support system

10) Karnofsky Performance Status Scale (KPS) – to assess functional ability of the patients.

11) Morisky's medication adherence Scale (MMAS) – to assess medication adherence

Kuppuswamy socioeconomic status scale

Kuppuswamy socioeconomic status scale is a widely used scale to assess the socioeconomic class of study participants. It was published in 1981 originally but modifications have been published regularly to account for the changing price index. It has three categories to be scored-educational level of the head of the family, occupation of the head of the family and income per month. Education is scored from 1 to 7, occupation from 1 to 10 and monthly family income from 1 to 12. The total is added up. There are five socioeconomic classes that can be derived from the scale-upper, upper middle, middle/lower middle, lower/upper lower and lower. The scale needs modification from time to time because of the changing price index that affects the validity of the income per month subset in the scale (Kumar BR et al., 2012, Sharma R et al., 2014, Patro BK et al., 2012).

Symptom Checklist -90 Revised

The Symptom checklist-90-R is a self-report psychometric instrument (questionnaire) published by the clinical assessment division of the Pearson assessment and information group. It is used to screen for and evaluate a wide range of psychological problems and symptoms of psychopathology. It consists of 90 items, yielding 9 scores along primary symptoms and 3 scores among global distress indices. The primary symptoms that are assessed are somatization, obsessive-compulsive, depression, anxiety, interpersonal sensitivity, phobic anxiety, paranoid ideation, .hostility and psychotism. The three global distress indices are global wellness index, hardiness and symptom free. The internal consistency coefficient rating ranged from 0.80 for depression and 0.77 for psychotis(Pearson, 2016) It is one of the most widely used measures of psychological distress in research and clinical practice.

Hamilton depression rating scale

The Hamilton depression rating scale was developed in the 1950s. It is a clinician administered scale and is one of the widely used scales in psychiatry. The scale was originally designed with 21 items. Later, 4 items (diurnal variation, de-realization, paranoid symptoms and obsessional symptoms) were dropped. Diurnal variation was considered as not being a measure of depression or its

intensity. Others were considered as being infrequent. There are now 17 items in the scale, though the original 21 items version is also sometimes used. In this study, we used the 17 item version. The following are the items in the scale: depressed mood, feeling of guilt, suicide, insomnia early, insomnia middle, insomnia late, work and activities, retardation, agitation, anxiety (psychic), anxiety(somatic), somatic symptoms (gastrointestinal), somatic symptom (general), genital symptoms, hypochondriasis, loss of weight and insight. Each item is scored on a three to five point scale (0-2 to 0-4). Individual scores are later summed up to give a total score. The scale has been shown to be sensitive over a wide range of depression severity in studies. The inter-rater reliability for the scale has also been found to be good (0.82) (Cicchetti DV et al., 1983). Internal consistency of the scale was found to be 0.83. Validity of the scale range from 0.65 to 0.90 with global measures of severity of depression in studies. Validity also highly correlated with behavioral features, and somatic features account for about half of the total possible score in the scale. The maximum possible total score on the scale is 52. The scale is considered as a standard instrument. (Hamilton M et al.,1960, Williams JP et al.,1988, Carroll BJ et al.,1973, Baer L et al., 2010).

Hamilton anxiety rating scale

The Hamilton anxiety rating scale was designed to quantify anxiety in patients already diagnosed with anxiety disorders. The scale was not intended to be a diagnostic tool. The scale was also not meant for using disorders other than neurotic anxiety states. The scale contains 14 items and is clinician administered. It takes about 15 to 30 minutes to administer the scale. The individual items are: anxious mood, tension, fears, insomnia, intellectual, depressed mood, somatic (muscular), somatic (sensory), cardiovascular systems, respiratory systems, gastrointestinal systems, genitourinary systems, autonomic systems and behavior at interview. Each item is scored on a five point scale 0 to 4. The scores are all added up to yield the total score. In addition to the total score, two subscales have been suggested-cyclic subscale and somatic subscale. A scale has been evaluated for reliability and has been found to have an inter-rater correlation of 0.89. Internal consistency ranges from 0.77 to 0.92. (Hamilton MA et al., 1959, Maier W et al.,1988, Baer L et al.,2010).

Severity of Alcohol Dependence Questionnaire (SADQ)

The Severity of Alcohol Dependence Questionnaire is a 20 item screening tool used to assess the presence and level of alcohol dependence.

There are 5 subscales with 4 items in each:

1) Physical withdrawal symptoms

2) Affective withdrawal symptoms

3) Craving and relief drinking

4) Typical daily consumption

5) Rapidity of reinstatement.

Each item is scored on a 4-point scale, ranging from “almost never” to “nearly always”, resulting in a score of 0 to 3. The total maximum score possible is sixty and the minimum is 0. A score of 31 or higher indicates “severe alcohol dependence”. A score of 16 to 30 indicates “moderate dependence”. A score of below sixteen indicates only a mild dependency.

Montreal Cognitive assessment

Montreal Cognitive assessment was created in 1996 by Ziad Nasreddine in Montreal, Quebec. It is a one page 30-point test administered in approximately ten minutes. MoCA scores range between 0 and 30. A score of 26 or above is considered to be normal.It assesses several cognitive domains. The short term memory recall task (5 points) involves two learning trials of 5 nouns and delayed recall after 5 minutes. Visuospatial abilities are assessed using a clock-drawing task (3 points) and a 3-dimensional cube copy (1 point). Executive functions are

assessed using an alternation task adopted from the trial making B task (1 point), a phonemic fluency task (1 point) and a two – item verbal abstraction task (2 points). Attention, concentration and working memory are evaluated using a sustained attention task (target detection using tapping; 1 point), serial subtraction task (3 points), and digits forward and backward (1 point each) language is assessed using a 3 –item confrontation naming task with low-familiarity animals (lion, camel, rhinoceros; 3 points), repetition of two syntactically complex sentences (2 points). Finally, orientation to time and place is evaluated. (Nasreddine Z et al.,2005)

Multidimensional Scale of Perceived Social Support

A number of studies have demonstrated that social support functions as a buffer for psychological distress. In an attempt to measure social support, Zimet et al. developed the Multidimensional Scale of Perceived Social Support, which has been widely used in both clinical and non clinical samples. (zimet et al., 1988)

The MSPSS is intended to measure the extent to which an individual perceives social support from three sources: Family (Items 3, 4, 8, and 11), Friends (Items 6, 7, 9, and 12) and Significant others (Items 1, 2, 5, and 10). The MSPSS is a brief, easy to administer self report questionnaire which contains 12

items rated on a seven point Likert-type scale with scores ranging from ‘very strongly disagree’ to very strongly agree. The MSPSS has proven to be psychometrically sound in diverse samples and to have good internal reliability and test-retest reliability, and robust factorial validity.

Karnofsky Performance Status Scale (KPS)

The Karnofsky Performance Status Scale index allows patients to be classified as to their functional impairment. This can be used to compare effectiveness of different therapies and to assess the prognosis in individual patients. The lower the Karnofsky score, the worse the survival for most serious illness. The Karnofsky Performance Score ranking runs from 100 to 0, where 100 is “perfect” health and 0 is death. This scoring system is named after Dr. David A. Karnofsky who described the scale in 1948. (Karnofsky et al)

100- Normal; no complaints; no evidence of disease.

90- Able to carryon normal activity; minor motor signs or symptoms of disease

80- Normal activity with effort; some signs or symptoms of disease.

70- Cares for self; unable to carry on normal activity or to do active work.

60- Requires occasional assistance, but is able to care for most of his personal needs.

50- Requires considerable assistance and frequent medical care.

40- Disabled; require special care and assistance.

30- Severely disabled; hospital admission is indicated although death not imminent'

20- Very sick; hospital admission necessary; active supportive treatment necessary.

10- Moribund; fatal processes progressing rapidly.

0- Dead.

Morisky's medication adherence Scale (MMAS)

The MMAS is a generic self-reported, medication- taking behavior in which the specific health issue is inserted for the health concern. The MMAS consists of four items with a scoring scheme of "yes"=0 and "No"=1. The items are summed to give a range of scores from 0 to 4.

Statistical analysis

Statistical analysis was done using SPSS, to assess the prevalence of psychiatric illness in CKD patients, and to assess the type and severity of psychiatric illness and their proportion in relation to treatments (conservative,

hemodialysis, post renal transplantation), and to study the association between psychiatric illness and the factors like support systems, patients functional level, treatment adherence. P value was taken to be significant if it was <0.05.

RESULTS

RESULTS

A total of 118 patients were approached for the study. Of these, 5 patients did not given consent to participate in the study and 3 were dypnoeic, hence not included in the study. The remaining 110 patients consented to participate in the study. Informed consent was obtained from all these participants.

Of these 110 patients, 36.4% (n=40) were in conservative treatment, 31.8% (n= 35) were in hemodialysis, 31.8% (n=35) were post renal transplant patients.

Among the patients in conservative treatment 50% (n=20) were males and 50% (n=20) were females. About 2.5% were in the age group of 18 - 39 years, 42.5% in the 40 – 59 age group, 55% in the 60 or more years. About 15% had nil formal education, 47.5% had studied upto primary level and 37.5% had studied upto secondary level. Majority were from upper lower socio economic status (42.5%), 25% from lower, 27.5% from lower middle and 5% from upper middle socio economic status. Majority were Hindu(80%) and 2.5% Muslims, 17.5% Christians.90% were from urban background, majority of them were unemployed(85%) and 10% doing unskilled work, 2.5% doing semiskilled, 2.5% doing skilled works. Majority were married (77.5%), from nuclear family (77.5%)

Among the patients in hemodialysis, 57.1% (n=20) were males and 42.9% (n=15) were females. 51.4% were in the age group of 18 - 39 years, 25.7% in 40 - 59 years age group, 22.9% in the 60 and more years. About 11.4% had nil formal education, 40% had studied upto primary level, 25.7% had studied upto secondary level and 22.9% had studied upto the graduate level. 34.3% from lower and upper lower socio-economic status respectively, 25.7% from lower middle and 5.7% from upper middle socio-economic status. Majority were Hindu(74.3%) and 20% Muslims, 5.7% Christians.82.9% were from urban background, majority of them were unemployed(74.3%) and 5.7% doing unskilled work, 5.7% doing semiskilled, 8.6% doing skilled works, 5.7% were professionals. Majority were married (71.4%), from nuclear family (82.9%)

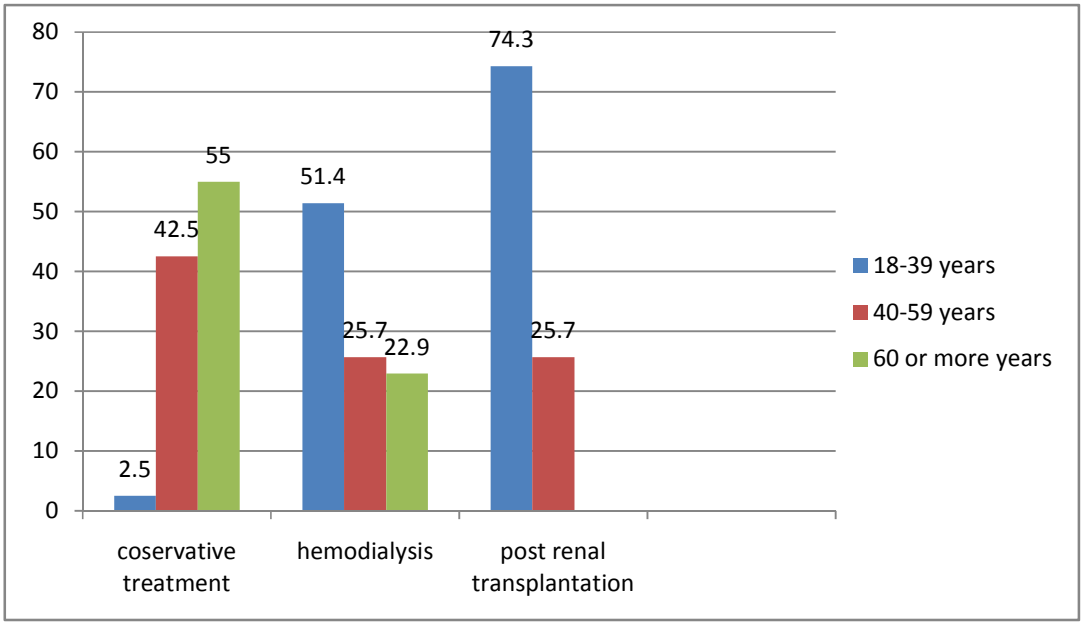
In post transplanted patients 57.1% were males, 42.9% were females. 74.3% were in the age group of 18 - 39 years, 25.7% were in 40 -59 years age group. 2.9% had nil formal education, 8.6% had educated upto primary level, 57.1% had educated upto secondary level, 31.4% had educated upto the graduate level. 40% were in lower middle socio-economic status, 34.3%from upper lower, 5.7% from lower, 20% from upper middle socio-economic status. No one was from upper socio-economic status in all 3 groups. Majority were Hindu(85.7%) and 8.6% Muslims, 5.7% Christians.71.4% were from urban background, majority of them were unemployed(42.9%) and 20% doing unskilled work,

17.1% doing semiskilled, 14.3% doing skilled works, 5.7% were doing professional work. Majority were married (77.1%), from nuclear family (74.3%) (Table - 1)

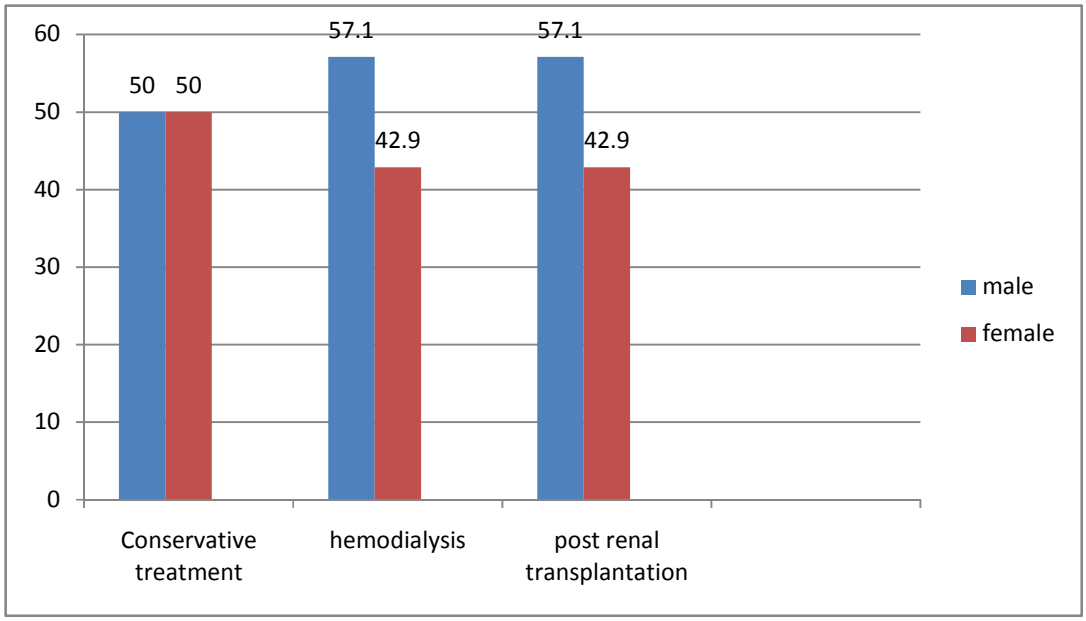
Table-1: Socio-demographic profile of the study population

s.n	Socio-demographic variable		Conservative treatment(N=40) n(%)	Hemodialysis (N=35) n (%)	Post renal transplantation (N=35) n(%)
1	Age (years)	18 – 39	1 (2.5)	18 (51.4)	26 (74.3)
		40 -59	17 (42.5)	9 (25.7)	9 (25.7)
		60 or more	22 (55)	8 (22.9)	-
2	Sex	Male	20 (50)	20 (57.1)	20 (57.1)
		female	20 (50)	15 (42.9)	15 (42.9)
3	Education	Illiterate	6 (15)	4 (11.4)	1 (2.9)
		Primary level	19 (47.5)	14 (40)	3 (8.6)
		Secondary level	15 (37.5)	9 (25.7)	20 (57.1)
		graduate	-	8 (22.9)	11 (31.4)
4	Socio-economic status	Upper	-	-	-
		Upper middle	2 (5)	2 (5.7)	7 (20)
		Lower middle	11 (27.5)	9 (25.7)	14 (40)
		Upper lower	17 (42.5)	12 (34.3)	12 (34.3)
		lower	10 (25)	12 (34.3)	2 (5.7)
5	Religion	Hindu	32 (80)	26 (74.3)	30 (85.7)
		Muslim	1 (2.5)	7 (20)	3 (8.6)
		Christian	7 (17.5)	2 (5.7)	2 (5.7)
6	Locality	Rural	4 (10)	6 (17.1)	10 (28.6)
		urban	36 (90)	29 (82.9)	25 (71.4)
7	Occupation	Unemployed	34 (85)	26 (74.3)	15 (42.9)
		Unskilled work	4 (10)	2 (5.7)	7 (20)
		Semi skilled	1 (2.5)	2 (5.7)	6 (17.1)
		Skilled work	1 (2.5)	3 (8.6)	5 (14.3)
		profession	-	2 (5.7)	2 (5.7)
8	Marital status	Single	-	6 (17.1)	8 (22.9)
		Married	31 (77.5)	25 (71.4)	27 (77.1)
		Separated	9 (22.5)	4 (11.4)	-
9	Family type	Nuclear	31 (77.5)	29 (82.9)	26 (74.3)
		Joint	9 (22.5)	6 (17.1)	9 (25.7)

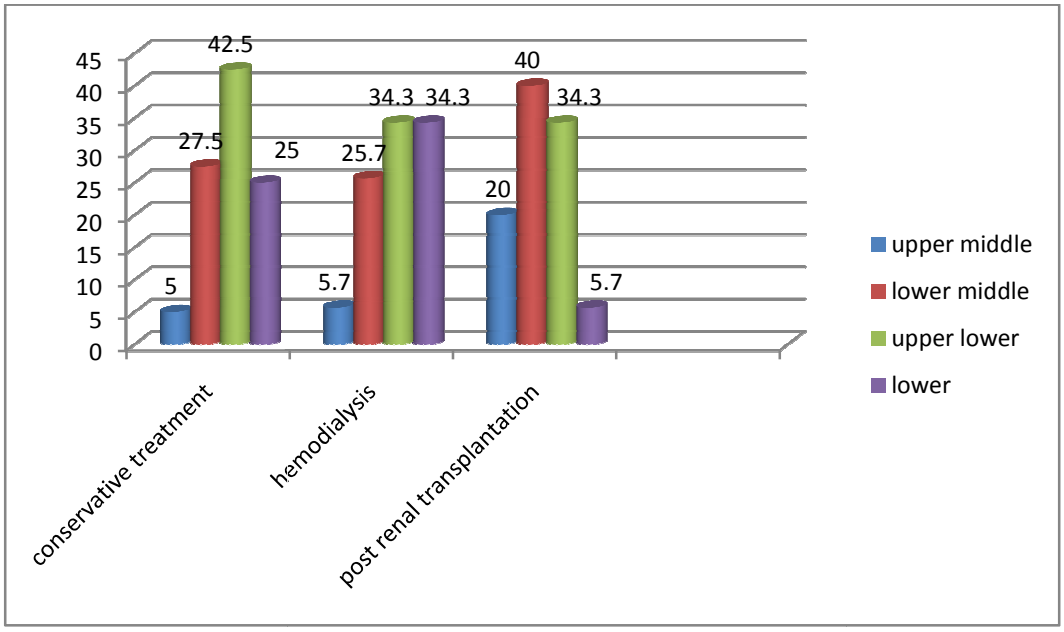
Showing various age groups of the study population



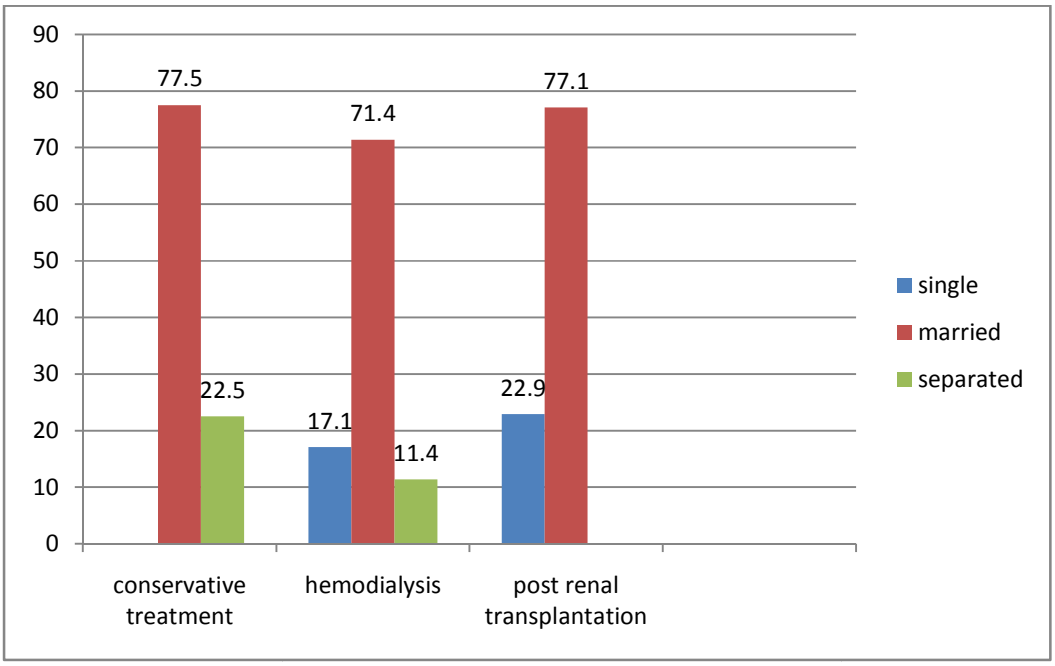
Male female ratio in study population



Socio economic status of the study population



Marital status of the study population

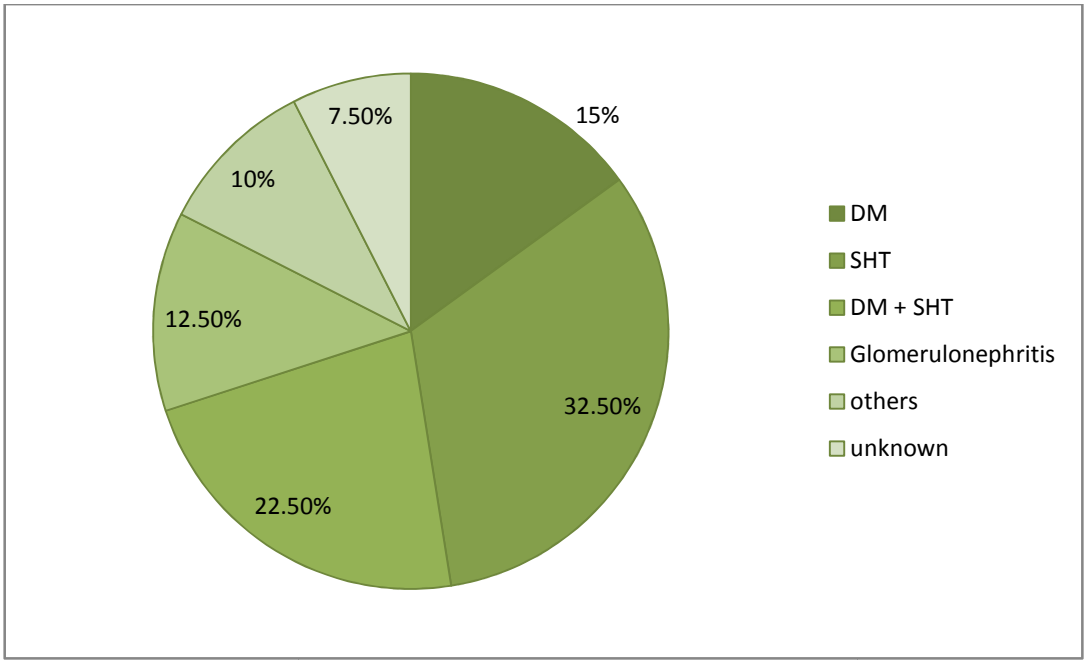


Chronic kidney disease related factors

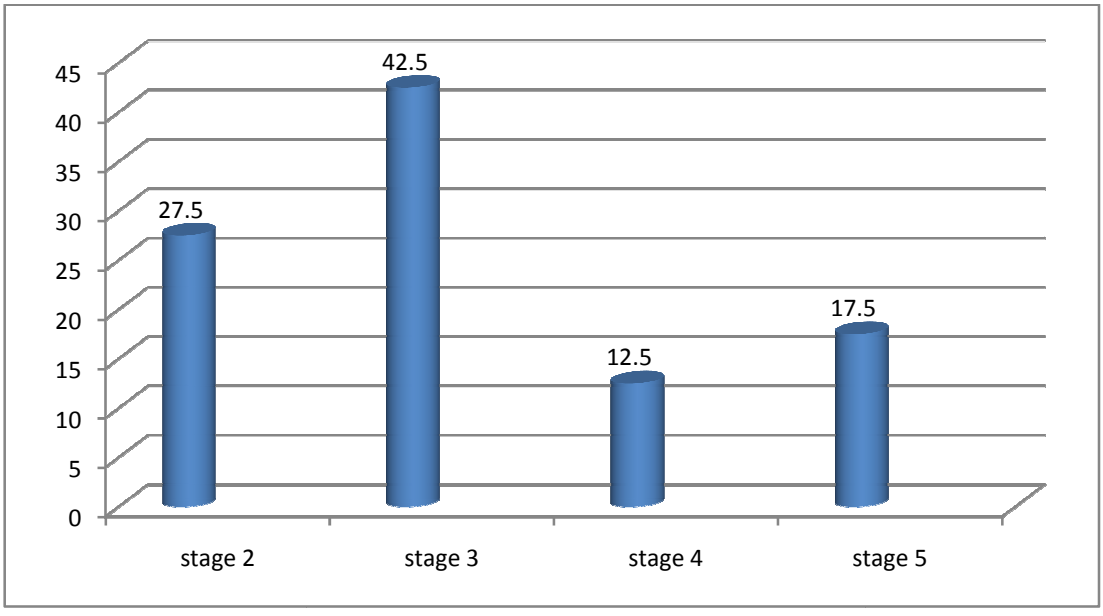
Data regarding various chronic kidney disease related factors - age at renal disease diagnosis, cause for renal failure, renal failure stage, duration of treatment, co-morbid medical illnesses, and serum creatinine level were analysed. (Table – 2)

In conservative treatment group, mean age of renal disease diagnosis was 55.10 ± 9.06years. The reported underlying causes for renal failure were systemic hypertension (32.5%), diabetes mellitus (15%), glomerulonephritis (12.5%), others include over the counter tablet ingestion (10%), unknown (7.5%). About 42.5% were in renal failure stage 3, 27.5%in stage 2, 12.5% in stage 4 and 17.5% in stage 5. About 57.5% were on treatment for more than 2 years, 30% were within 1 year and 12.5% were on treatment for1 to 2 years. About 52.5% had atleast one medical comorbidity.

Reported causes for renal failure disease in conservative treatment group

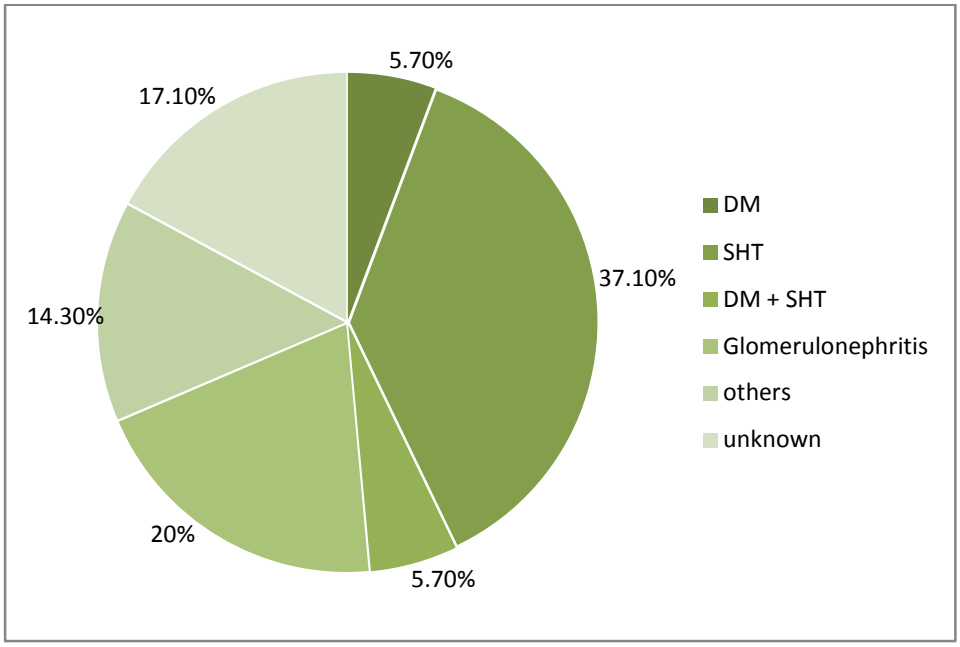


Patient's renal failure stage in conservative treatment group

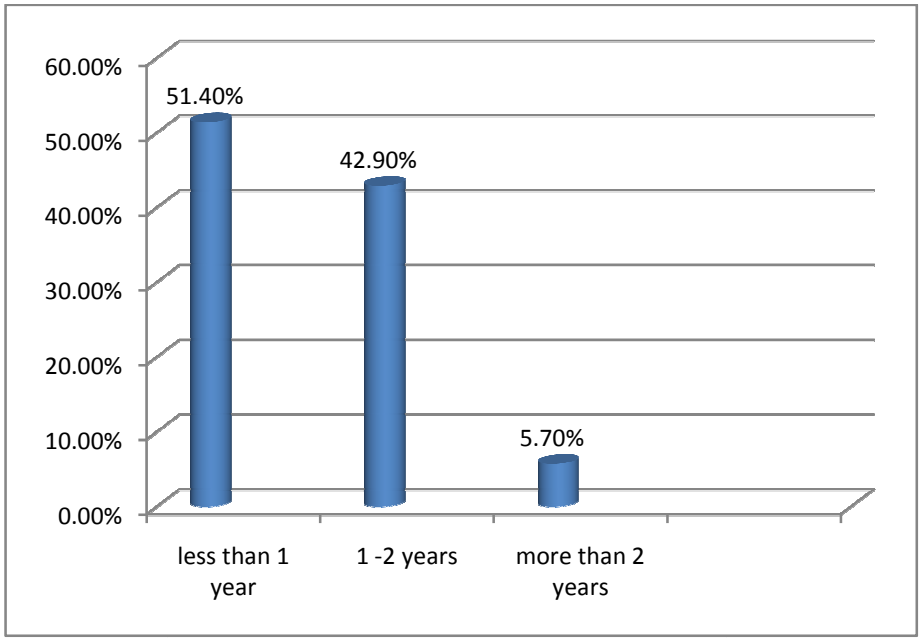


In hemodialysis treatment group, mean age of study population was 42.31 ± 15 years. Mean age of renal disease diagnosis was 39.14 ± 14.7 years; the cause for renal failure was systemic hypertension (37.1%), glomerulonephritis (20%), unknown (17.1%), other causes (14.3%), diabetes mellitus (5.7%). All patients were in stage 5 renal failure. About 51.4% were undergoing hemodialysis for less than a year, 42.9% were on treatment for 1-2 years, and 5.7% were on hemodialysis for more than 2 years. About 77.1% had at least one of the medical comorbidity.

Reported causes for renal failure in hemodialysis group



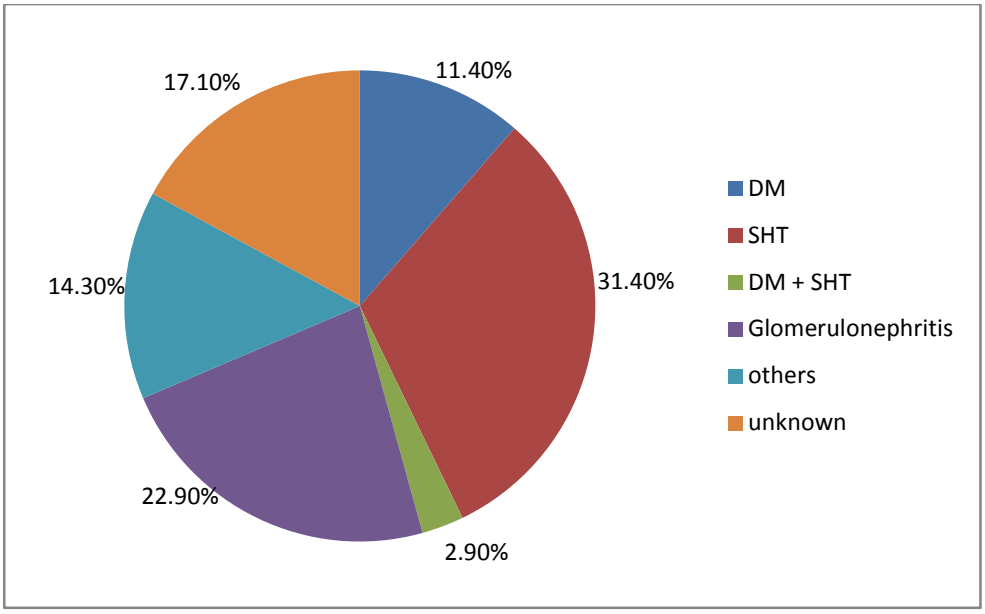
Duration of treatment in hemodialysis group



In post renal transplantation patients, mean age of the study population was 33.51 ± 9.92 years. Mean age of renal disease diagnosis was 28.23 ± 9.632 years. The causes for renal disease were systemic hypertension (31.4%), glomerulonephritis (22.9%), unknown (17.1%), others (14.3%), diabetes mellitus (11.4%). Prior to transplantation all were in stage 5 disease and post transplantation 5.7% were in stage 2 renal failure.

About 91.4% had undergone cadaver kidney transplantation, 8.6% were undergone live renal transplantation. About 45.7% were in post transplantation treatment for more than 2 years, 28.6% were in post transplantation period of 1 -2 years and 25.7% were within one year of post transplantation. About 14.3% had at least one medical co-morbidity.

Reported causes for renal failure in post renal transplantation group



Donor type

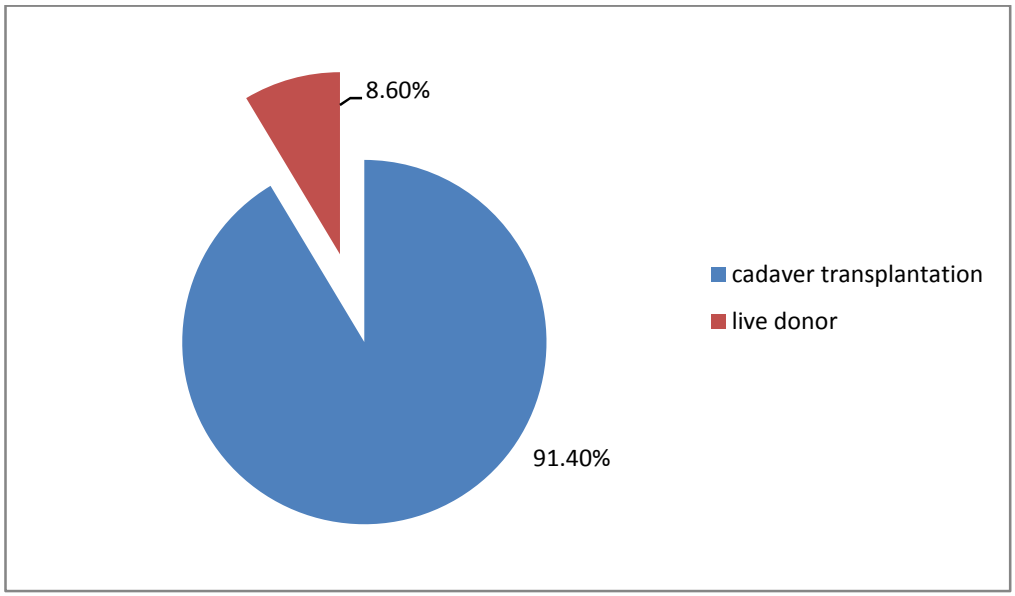


Table – 2: Chronic kidney disease related factors in the study population

s.n	CKD related factors	Conservative treatment N = 40	Hemodialysis N = 35	Post renal transplantation N= 35
1	Age (mean years with s.d)	58.83 ± 8.691	42.31 ± 15	33.51 ± 9.92
2	Age at renal disease diagnosis (mean years with s.d)	55.10 ± 8.691	39.14 ± 14.7	28.23 ± 9.632
3	Cause for renal failure n (%)			
	Diabetes mellitus	6 (15)	2 (5.7)	4 (11.4)
	Systemic hypertension	13 (32.5)	13 (37.1)	11 (31.4)
	DM + SHT	9 (22.5)	2 (5.7)	1 (2.9)
	glomerulonephritis	5 (12.5)	7 (20)	8 (22.9)
	Others	4 (10)	5 (14.3)	5 (14.3)
	unknown	3 (7.5)	6 (17.1)	6 (17.1)
4	Renal failure stage n (%)			
	Stage 2	11 (27.5)		2 (5.7)
	Stage 3	17 (42.5)		
	Stage 4	5 (12.5)		
	Stage 5	7 (17.5)	35 (100)	
5	Duration of treatment n (%)			
	Less than 1 year	12 (30)	18 (51.4)	9 (25.7)
	1 -2 years	5 (12.5)	15 (42.9)	10 (28.6)
	More than 2 years	23 (57.5)	2 (5.7)	16 (45.7)
6	Sr. creatinine level (mean value)	2.74 ± 1.352	5.83 ± 2.571	1.51 ± 0.780
7	Comorbid medical illness			
	Present	21 (52.5)	27 (77.1)	5 (14.3)
	absent	19 (47.5)	8 (22.9)	30 (85.7)

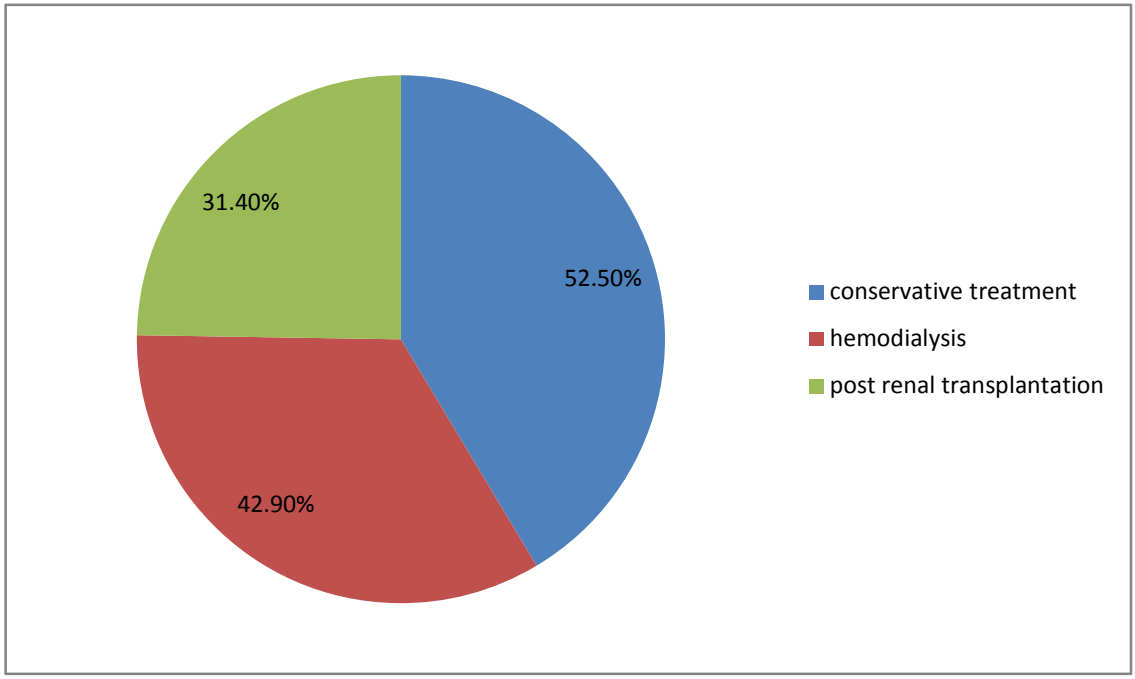
Prevalence of psychiatric illnesses in the study population

Of the 110 patients who participated in the study, 47 (42.7%) had at least one psychiatric illness. Among groups 21 (52.5%) patients in conservative treatment, 15 (42.9%) patients in hemodialysis, 11 (31.4%) post renal transplantation patients had psychiatric illness. (Table – 3)

Table – 3: Prevalence of psychiatric illnesses in the study population

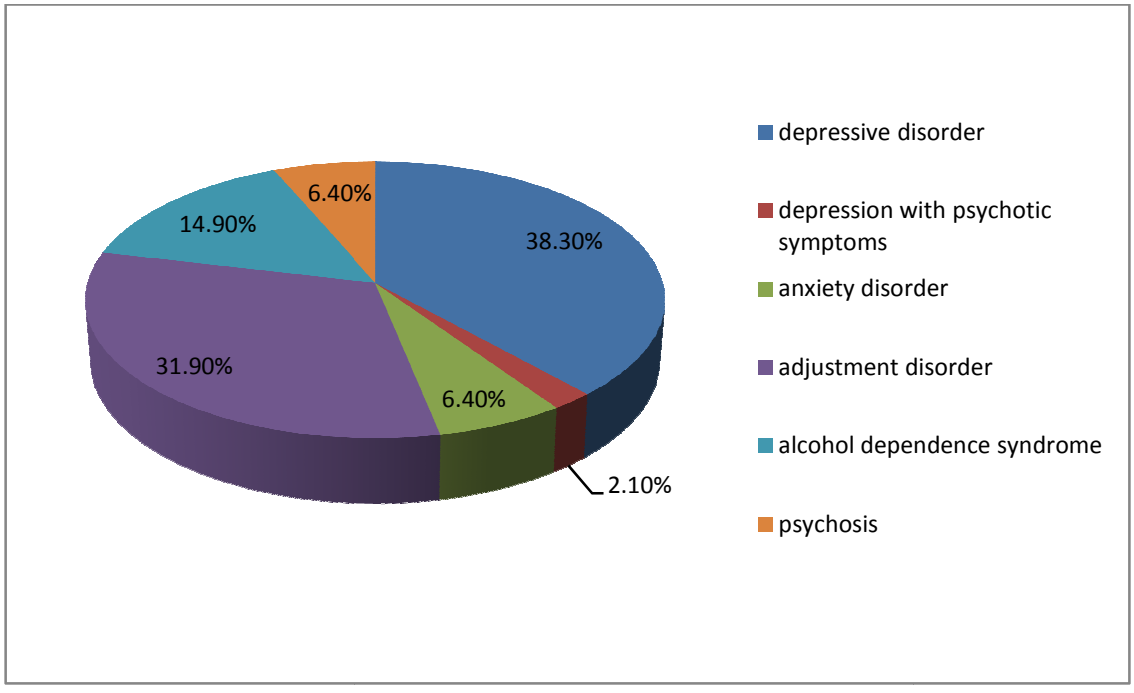
s.n	Psychiatric illness	Conservative treatment (N = 40) n(%)	Hemodialysis (N = 35) n(%)	Post renal transplantation (N = 35) n(%)
1	Presence of psychiatric illness	21 (52.5)	15 (42.9)	11 (31.4)
2	Absence of psychiatric illness	19 (47.5)	20(57.1)	24 (68.6)

Prevalence of psychiatric illness among study groups



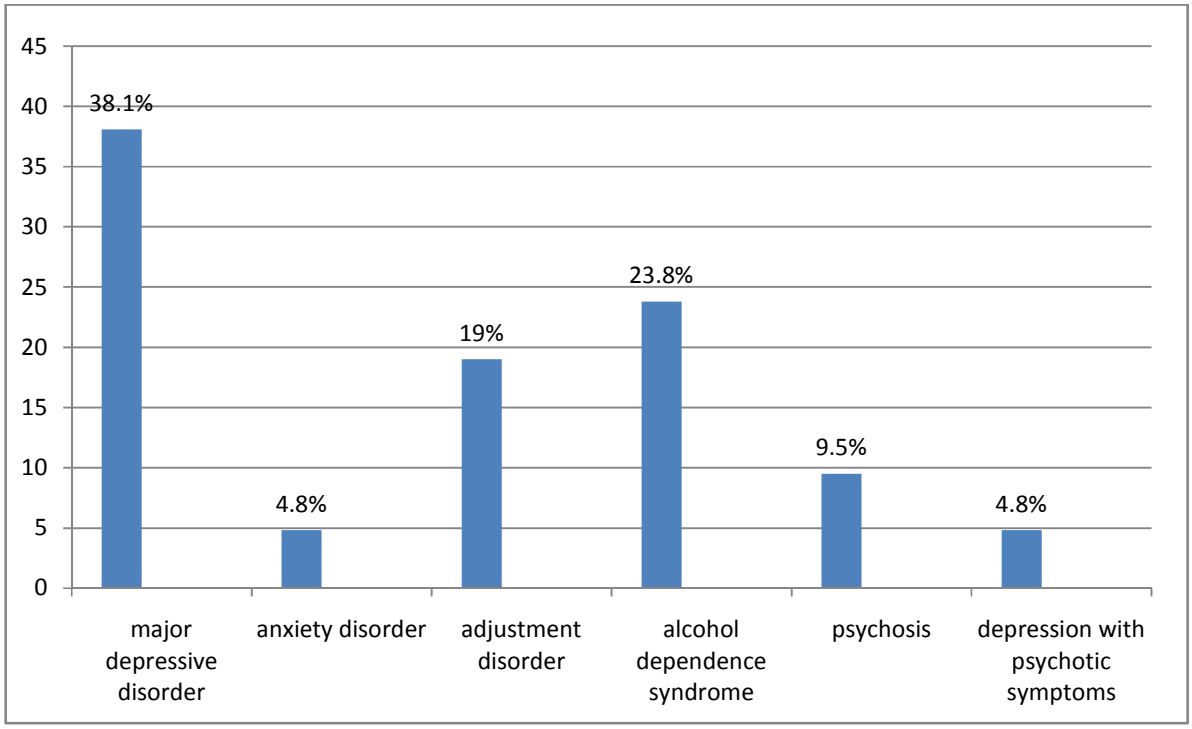
Prevalence of various psychiatric illnesses in chronic kidney disease

Depressive disorder was present in 18 (38.3%) patients. 1 patient (2.1%) had depressive disorder with psychotic symptoms, 3(6.4%) had anxiety disorder, 15 (31.9%) had adjustment disorder, 7 (14.9%) had alcohol dependence syndrome, 3 (6.4%) had psychosis.



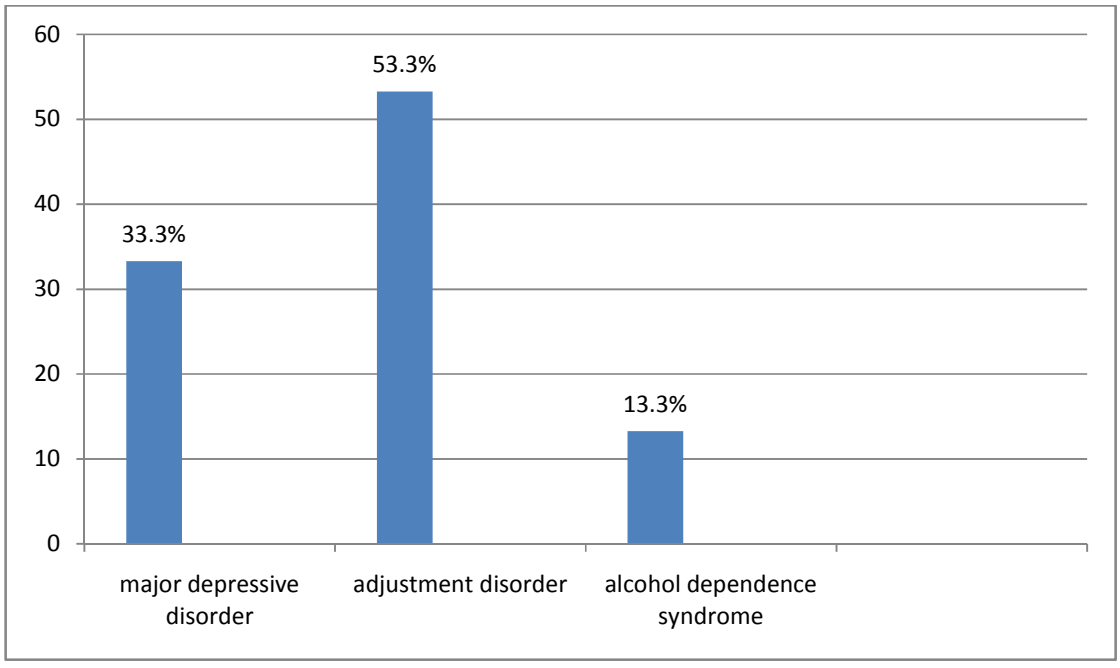
Presentation of psychiatric illnesses in patients with conservative treatment

In conservative treatment group, 21 (52.5%) had psychiatric illness. Among these, 8(38.1%) had major depressive disorder, 1 (4.8%) had depressive disorder with psychotic symptoms, 1 (4.8%) had generalised anxiety disorder, 4(19%) had adjustment disorder, 5(23.8%) had alcohol dependence syndrome and 2 (9.5%) had psychosis.(Table - 4)



Presentation of psychiatric illnesses in patients undergoing hemodialysis

In hemodialysis group, 15 (42.9%) had psychiatric illness. Among these, 5(33.3%) had major depressive disorder, 8(53.3%) had adjustment disorder and 2(13.3%) had alcohol dependence syndrome. (Table - 4)



Presentation of psychiatric illnesses in post renal transplantation group

In post renal transplantation group, 11 (31.4%) had psychiatric illness. Among these, 5(45.5%) had major depressive disorder, 2 (18.2%) had anxiety disorder, 3 (27.3%) had adjustment disorder, 1 (9%) had psychosis. Among 2 of the anxiety disorder patients one had illness anxiety and one had generalized anxiety disorder. (Table - 4)

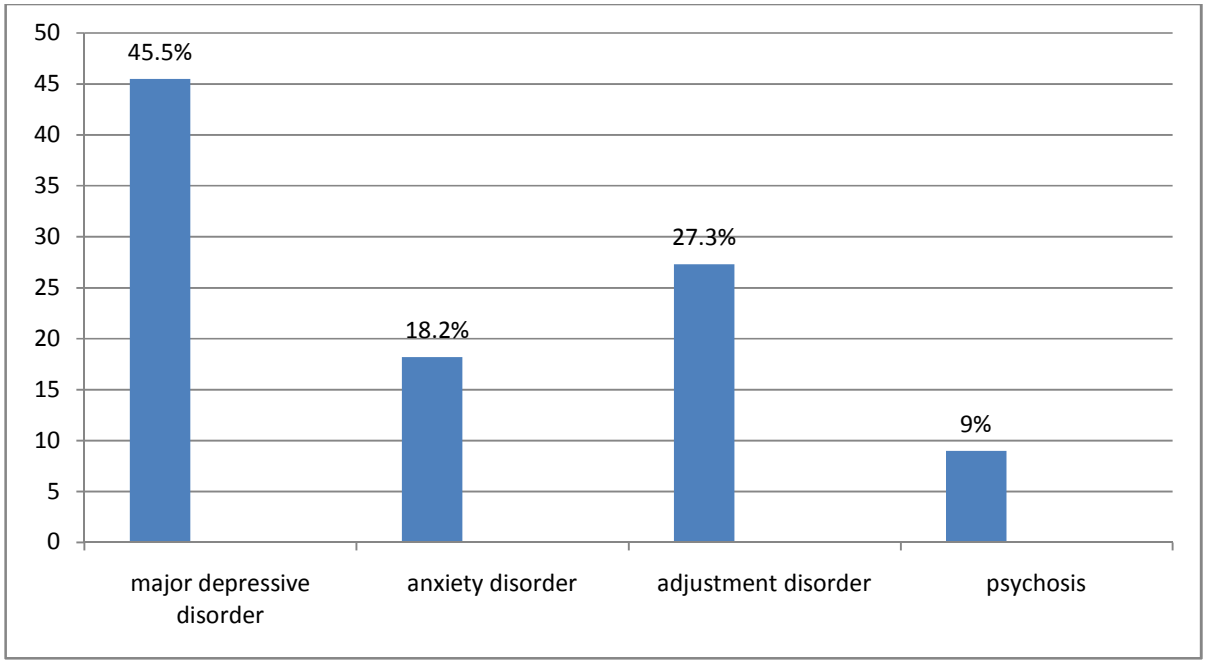
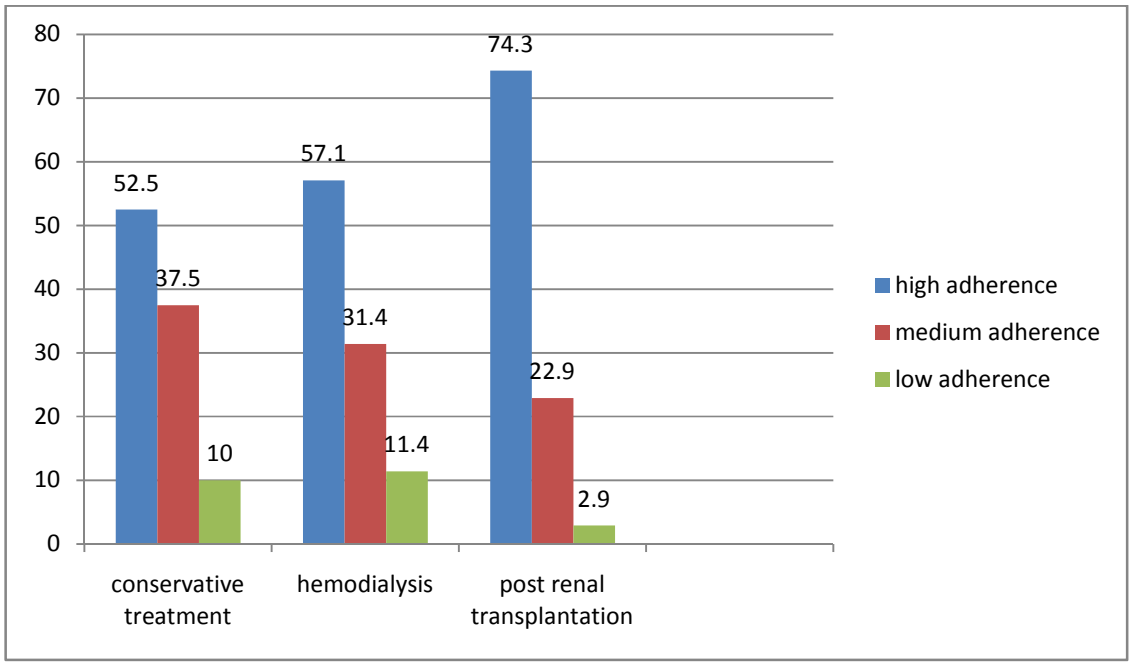


Table - 4: Presentation of psychiatric illnesses among study population

s.n	Psychiatric illness	Conservative treatment (n = 21)	Hemodialysis (n = 15)	Post renal transplantation (n = 11)
1	Major depressive disorder n (%)	8 (38.1)	5 (33.3)	5 (45.5)
	Mild	1	0	1
	Moderate	6	3	3
	Severe	1	2	1
	Depression with psychotic symptoms	1		
2	Anxiety disorder n(%)	1 (4.8)		2 (18.2)
	Gen anxiety disorder	1		1
	Illness anxiety			1
3	Adjustment disorder	4 (19)	8 (53.3)	3 (27.3)
	With anxiety symptoms			1
	With depressive symptoms	4	8	2
4	Alcohol dependence syndrome	5 (23.8)	2 (13.3)	0
	Mild	0	1	0
	Moderate	2	1	0
	Severe	3	0	0
5	Psychosis	2 (9.5)		1 (9)
6	Family history of psychiatric illness			
	Absent	33 (82.5)	29 (82.9)	29 (82.9)
	Present	7 (17.5)	6 (17.1)	6 (17.1)

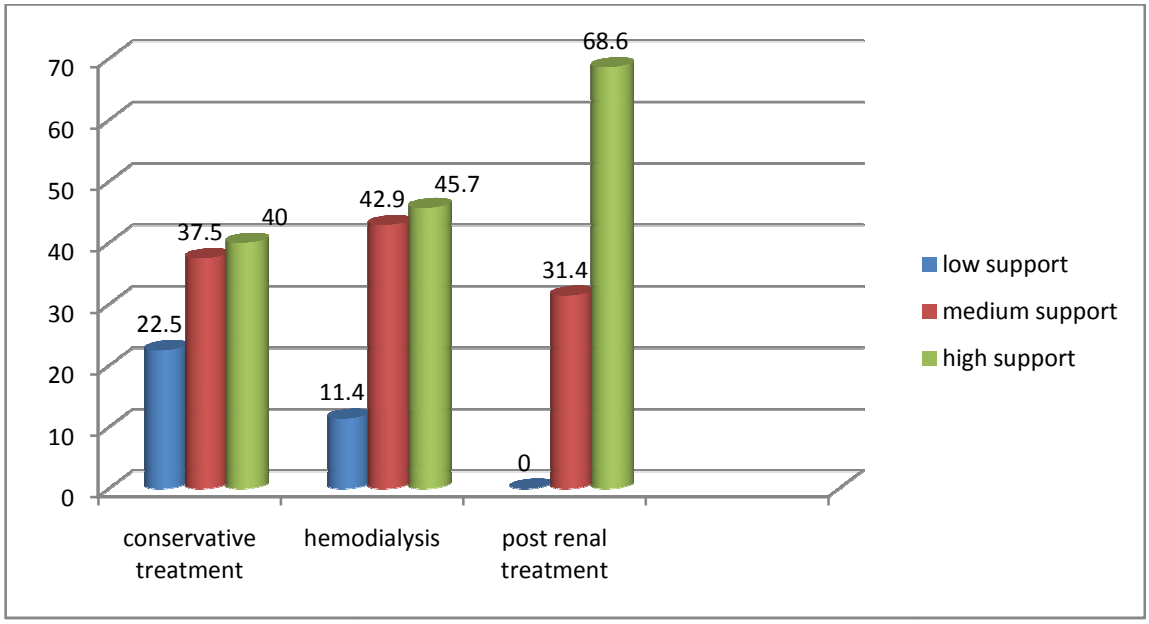
Treatment adherence among groups

Overall, study population had high treatment adherence. 52.5% had high level of treatment adherence, 37.5% had medium level of adherence and 10% had low treatment adherence in conservative treatment. 57.1% had high treatment adherence, 31.4% had medium and 11.4% had low treatment adherence in hemodialysis treatment. In Post renal transplantation 74.3% had high, 22.9% had medium and 2.9% had low adherence with treatment.



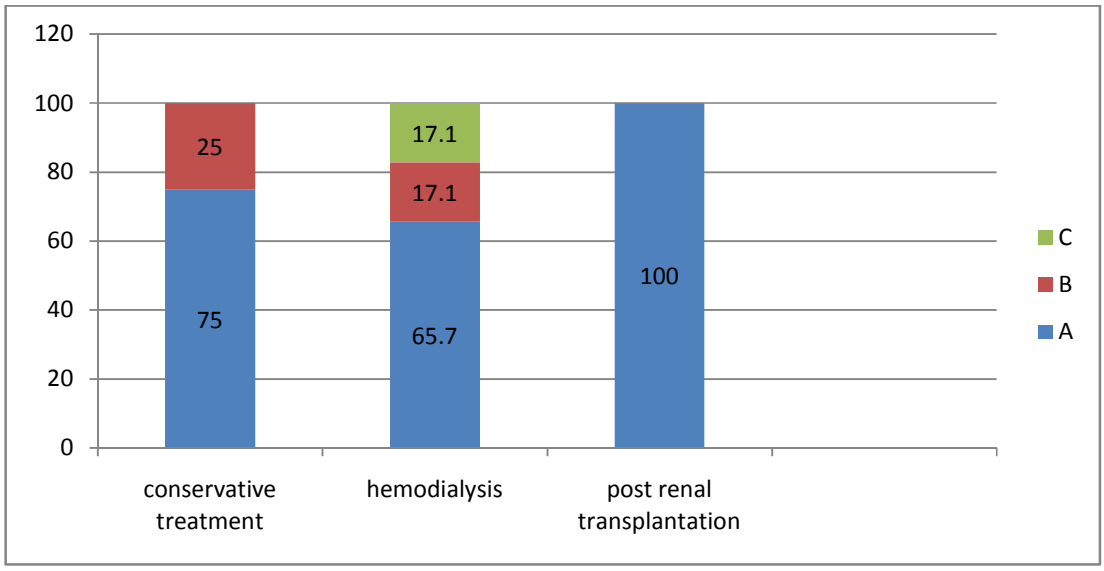
Social support system among groups

About 68.6% had high social support in post renal transplantation patients, but 45.7% of hemodialysis patients and 40% of patients in conservative group had high social support. 11.4%, 22.5% had low social support in hemodialysis and conservative treatment respectively



Functional level of the patients among groups

All 35 (100%) patients in post renal transplantation are able to do normal activities as previously. Whereas only 75%, 65.7% patients able to carry on normal activities in conservative and hemodialysis treatment. About 17.1% were unable to carry on normal activity or to do active work in hemodialysis treatment.



A – Able to carry on normal activity and to work; no special care needed

B – Unable to work; able to live at home and care for most personal needs; varying amount of assistance needed

C – Unable to care for self; requires equivalent of institutional or hospital care; disease may be progressing rapidly.

Association between Socio-Demographic factors and Psychiatric illness in conservative treatment groups

Among chronic kidney disease patients on conservative treatment, various socio-demographic factors collected during the study were analysed for their relationship with psychiatric illnesses. Chi square probability was used for this analysis. It was observed that patients from rural area had a statistically significant association with psychiatric illness. All other socio-demographic factors – gender, education, socio economic status, marital status, occupation and type of family did not reach statistical significance.(Table – 5)

Table - 5: Association between Socio-Demographic factors and Psychiatric illness in conservative treatment groups

s.n	Socio demographic variables		Psychiatric illnesses			P – value
			Absent (N=19)	Present (N=21)		
1	sex	Male	10	10	Chi square = 0.100	0.752
		female	9	11		
2	Education	Illiterate	2	4	Chi square = 1.644	0.439
		Primary level	8	11		
		Secondary level	9	6		
		Graduate	0	0		
		Post graduate	0	0		
3	Socio economic status	Upper	0	0	Chi square = 6.393	0.094
		Upper middle	2	0		
		Lower middle	7	4		
		Upper lower	8	9		
		Lower	2	8		
4	Locality	Rural	0	4	Chi square = 4.021	0.045
		Urban	19	17		
5	Occupation	Unemployed	17	17	Chi square = 1.905	0.592
		Unskilled	2	2		
		Semi skilled	0	1		
		Skilled	0	1		
		Profession	0	0		
6	Marital status	Single	0	0	Chi square = 0.043	0.835
		Married	15	16		
		Separated	4	5		
7	Family type	Nuclear	14	17	Chi square = 0.302	0.583
		Joint	5	4		

Association between socio demographic factors and psychiatric illness in hemodialysis patients

In hemodialysis group, patients from rural area had statistical significance with psychiatric illness (chi square value = 9.655; P = 0.003). Statistical significance was also found with patients from joint family and presence of psychiatric illness (chi square = 9.655; P = 0.002). No other variables had statistical significance with psychiatric illness.(Table-6)

Table - 6: Association between socio demographic factors and psychiatric illness in hemodialysis patients

s.n	Socio demographic variables		Psychiatric illnesses			P – value
			Absent N = 20	Present N = 15		
1	sex	Male	9	11	Chi square = 2.810	0.091
		female	11	4		
2	Education	Illiterate	0	1	Chi square = 9.204	0.27
		Primary level	8	4		
		Secondary level	8	6		
		Graduate	4	4		
		Post graduate	0	0		
3	Socio economic status	Upper	0	0	Chi square = 10.840	0.13
		Upper middle	0	2		
		Lower middle	9	0		
		Upper lower	5	7		
		Lower	6	6		
4	Locality	Rural	0	6	Chi square = 9.655	0.003
		Urban	20	9		
5	Occupation	Unemployed	17	9	Chi square = 8.249	0.083
		Unskilled	0	2		
		Semi skilled	2	0		
		Skilled	1	2		
		Profession	0	2		
6	Marital status	Single	4	2	Chi square = 0.319	0.853
		Married	14	11		
		Separated	2	2		
7	Family type	Nuclear	20	9	Chi square = 9.655	0.002
		Joint	0	6		

Associations between socio demographic variables and psychiatric illness in post renal transplantation

No statistical significance was observed between various socio demographic factors and presence of psychiatric illness in post renal transplantation patients. (Table-7)

Table - 7: Associations between socio demographic variables and psychiatric illness in post renal transplantation

s.n	Socio demographic variables		Psychiatric illnesses			P – value
			Absent N = 24	Present N = 11		
1	sex	Male	15	5	Chi square = 0.895	0.281
		female	9	6		
2	Education	Illiterate	0	1	Chi square = 3.700	0.296
		Primary level	3	0		
		Secondary level	14	6		
		Graduate	7	4		
		Post graduate	0	0		
3	Socio economic status	Upper	0	0	Chi square = 5.999	0.112
		Upper middle	7	0		
		Lower middle	7	7		
		Upper lower	9	3		
		Lower	1	1		
4	Locality	Rural	8	2	Chi square = 0.441	0.309
		Urban	16	9		
5	Occupation	Unemployed	8	7	Chi square = 4.265	0.371
		Unskilled	6	1		
		Semi skilled	5	1		
		Skilled	3	2		
		Profession	2	0		
6	Marital status	Single	6	2	Chi square = 0.199	0.656
		Married	18	9		
		Separated	0	0		
7	Family type	Nuclear	17	9	Chi square = 0.476	0.490
		Joint	7	2		

Chronic kidney disease related factors and presence of psychiatric illness

No statistically significant association was observed in the analysis of chronic kidney disease related factors (cause of renal disease, age at diagnosis, duration of treatment, co morbidity) and presence of psychiatric illness. No association was also observed with positive family history of psychiatric illness and presence of psychiatric illness in this study group.(Table - 8)

Table – 8: Chronic kidney disease related factors and presence of psychiatric illness

s.n	Illness related factors		Psychiatric illness			P value
			Present N = 47	Absent N = 63		
1	Cause of renal failure					
	Diabetes mellitus		2	10		
	Systemic hypertension		18	19		
	DM + SHT		8	4		
	Others		19	30	6.984	0.072
2	Age at diagnosis of CKD(mean years)					
	Conservative treatment		54.76± 9.428	55.47 ± 8.897	T test = 0.245	0.411
	Haemodialysis treatment		39.60 ± 15.389	38.80 ± 14.533	T test = -.157	0.678
	Post Renal transplantation		26.36 ± 8.571	29.08 ± 10.138	T test = 0.771	0.584
3	Duration of treatment (mean years + s.d)		4 ± 2.368	4.02 ± 2.479	0.034	0.996
4	Co morbid medical illness					
	Present		17	15	Pearson chi square test = 1.994	0.158
	Absent		30	48		
5	Family h/o psychiatric illness					
	Conservative treatment	Present	7	0	7.677	0.006
		Absent	14	19		
	Hemodialysis	Present	4	2	1.676	0.195
		Absent	11	18		
	Post renal transplantation	Present	2	4	0.012	0.812
		Absent	9	20		

Association between psychiatric illness and support system in chronic kidney disease

In the analysis of support system and psychiatric illness, patients with low support system had statistical significance with presence of psychiatric illness in conservative treatment (chi square = 9.969; P = 0.007) and hemodialysis treatment (chi square = 6.076; P = 0.048). In renal transplantation, majority of the patients had high support system and had lower prevalence of psychiatric illness (chi square = 12.696; P = 0.000) (Table – 9)

Table – 9: Association between psychiatric illness and support system in chronic kidney disease

s.n	Treatment	Psychiatric illness	Multidimentional scale of perceived social support				P value
			Low	medium	high		
1	Conservative treatment (N=40)	Present (n=21)	8	9	4	9.969	0.007
		Absent (n=19)	1	6	12		
2	Hemodialysis (N= 35)	Present (n=15)	4	5	6	6.076	0.048
		Absent (n=20)	0	10	10		
3	Renal transplantation (N=35)	Present (n=11)	0	8	3	12.696	0.000
		Absent (n=24)	0	3	21		

Association between psychiatric illness and functional ability of patients with chronic kidney disease

In the analysis of functional ability using Karnofsky's performance scale, patients unable to care for self and requires equivalent of institutional or hospital care had statistically significant association with presence of psychiatric illness in hemodialysis treatment patients. (chi square = 6.121; P = 0.047). No statistical variations observed with functional ability in conservative, renal transplanted patients with presence of psychiatric illness.(Table - 10)

Table - 10: Association between psychiatric illness and functional ability of patients with chronic kidney disease

S. n	Treatment	Psychiatric illness	Karnofsky's performance scale				P value
			A	B	C		
1	Conservative treatment (N=40)	Present (n=21)	15	6	0	0.301	0.583
		Absent (n=19)	15	4	0		
2	Hemodialysis (N=35)	Present (n=15)	5	4	6	6.121	0.047
		Absent (n=20)	12	8	0		
3	Renal transplantation (N=35)	Present (n=11)	11	0	0		
		Absent (n=24)	24	0	0		

Association between psychiatric illness and cognitive functioning in chronic kidney disease

In the analysis of cognitive functioning and presence of psychiatric analysis no statistically significant association was observed.(Table - 11)

Table – 11:Association between psychiatric illness and cognitive functioning in chronic kidney disease

s.n	Treatment	Psychiatric illness	Montreal cognitive assessment scale		Chi square test	P value
			Score ≥ 26	Score < 26		
1	Conservative treatment (N=40)	Present (n=21)	2	19	1.905	0.168
		Absent (n=19)	0	19		
2	Hemodialysis (N=35)	Present (n=15)	7	8	1.033	0.114
		Absent (n=20)	11	9		
3	Renal transplantation (N=35)	Present (n=11)	7	4	2.076	0.150
		Absent (n=24)	9	15		

Association between psychiatric illness and treatment adherence in chronic kidney disease

In the analysis of treatment adherence using Morisky's medication adherence scale – 4, presence of psychiatric illnesses were associated with low treatment adherence in both conservative and hemodialysis group, but it is statistically significant in hemodialysis group.(Table - 12)

Table – 12: Association between psychiatric illness and treatment adherence in chronic kidney disease

s. n	Treatment	Psychiatric illness	Morisky medication adherence scale 4			Chi square test	P value
			High	Medium	Low		
1	Conservative treatment (N=40)	Present (n=21)	9	8	4	4.406	0.110
		Absent (n=19)	12	7	0		
2	Hemodialysis (N=35)	Present (n=15)	7	4	4	6.027	0.049
		Absent (n=20)	13	7	0		
3	Renal transplantation (N=35)	Present (n=11)	8	3	0	0.600	0.742
		Absent (n=24)	18	5	1		

DISCUSSION

DISCUSSION

The study population was 110 chronic kidney disease patients. Of these 36.4% were in conservative treatment, 31.8% were in hemodialysis, 31.8% were in post renal transplantation treatment. Among them, 42.7% had psychiatric illness.

Conservative treatment

Among the patients in conservative treatment, no difference was observed with gender. Majority were (55%) more than 60 years of age, belongs to upper lower socio economic status (42.5%), from urban background (90%) and 85% were unemployed. Majority were married (77.5%) and from nuclear family (77.5%). Mean age of renal disease diagnosis was 55.10 ± 9.06 years, the most common reported cause for renal disease was systemic hypertension (32.5%), about 42.5% were in stage 3, 57.5% were on treatment for more than 2 years and 52.5% had at least one medical comorbidity. These findings were similar with C. P. Andrade (2012) et al., study.

52.5% had psychiatric illness in conservative treatment. Most common was major depressive disorder 38.1%, results consistent with C. P. Andrade et al (2012) study, who observed 37.3% major depressive disorder in CKD patients with conservative treatment. 23.8% had alcohol dependence syndrome, 19% had

adjustment disorder, 9.5% had psychosis, 4.8% had generalized anxiety disorder, and 4.8% had major depression with psychotic symptoms. Among patients undergoing conservative treatment, psychiatric illness was not statistically related to socio demographic factors and chronic kidney disease related factors except for locality.

52.5% had high level of treatment adherence, 37.5% with medium and 10% with low adherence. Presence of psychiatric illness was high with low and medium treatment adherence but results were not statistically significant. 22.5% had low support system, low and medium support system was statistically associated with presence of psychiatric illnesses. High support system was associated with absence of psychiatric illness, suggesting support system had an association with psychiatric illness either as a cause or as an effect.

75% were able to carry on with their normal activities as previously. In this study presence or absence of psychiatric illness had no influence over functional ability or vice versa among conservative treatment. This is in variance with C. P. Andrade et al (2012) study, who observed psychiatric illness was associated with worst functional capacity.

Hemodialysis treatment

Among the patients in hemodialyis treatment, 57.1% were males and 42.9% were females; 51.4% were in the age group of 18 – 39 years. Patients with hemodialysis were younger than patients in conservative treatment. Majority belonged to upper lower (34.3%) and lower (34.3%) socio economic status and from urban background (82.9%). About 74.3% were unemployed, 71.4% were married and 82.9% were from nuclear family. Our study socio demographic variables results were similar to previous studies (Vikhram Ramasubramanian et al., 2015%, C. P. Andrade et al.,2012) except the age of presentation was earlier in our study group.

Mean age of study population was 42.31 ± 15 years. Chronic renal disease diagnosed by 39.14 ± 14.7 years. In this study the most common cause of renal failure among hemodialysis patients was systemic hypertension (37.1%). All were in stage 5 chronic kidney disease.51.4% had treatment for less than a year, 42.9% had treatment for about 1 -2 years. 77.1% had comorbid medical illnesses.

42.9% (n = 15) patients in hemodialysis had psychiatric illness. This is consistent with the findings of Vikhram Ramasubramanian et al., 2015, who observed 40% prevalence of psychiatric illness among hemodialysis patients.

Most common psychiatric disorder observed was major depressive disorder (45.5%). This is consistent with previous study findings Ossareh S et al (2014) – 42.7%, C. P. Andrade et al (2012) – 41.6% of major depressive disorder, Bossola et al (2010) – 52.5%, Montinaro et al (2010) – 50%, Keskin et al (2011) – 40.2%, Jadhav B S et al(2014) – 40.69%.

In this study among patients undergoing hemodialyis, 27.3% had adjustment disorder. This is in variance with Vikhram Ramasubramanian et al., 2015 study (10% had adjustment disorder) and Jadhav B S et al., 2014 study (49.9% had adjustment disorder).

In this study 18.2% had anxiety disorder. Though Chen et al (2010) observed 21% of anxiety disorder, some of the previous studies reported high prevalence (45.7% observed by Cukor et al., 2008; 35% observed by Taskapan et al., 2005; 43% observed by Montinaro et al.,2010) . in our study 9% had alcohol dependence. No statistical significance was observed with presence of psychiatric illness and socio demographic factors, chronic kidney disease related factors except for locality, type of family. Presence of psychiatric illness was more in patients from rural area (chi square = 9.655; P = 0.003). Joint family type was significantly associated with presence of psychiatric illness (chi square = 9.655; P = 0.002).

Patients in hemodialysis treatment, 57.1% had high treatment adherence, 31.4% had medium adherence and 11.4% had low treatment adherence. About 42.9% (n= 15) had psychiatric illness, among them 26.7% (n = 4) had low treatment adherence, 26.7% (n = 4) had medium treatment adherence and 46.7% (n = 7) had high treatment adherence. Whereas in patients with absence of psychiatric illness, none where in low treatment adherence, 35% (n = 7) were in medium treatment adherence and 65% (n = 13) were in high treatment adherence. Our study results had showed statistically significant association between psychiatric illness and treatment adherence (chi square = 6.027; P = 0.049) in hemodialysis group. These results go along with Ossareh S et al (2014), Cukor d et al (2009) study results.

Among the patients undergoing hemodialysis, 45.7% had high support system, 42.9% had medium support and 11.4% had low social support. About 42.9% (n = 15) had psychiatric illness, among them 26.7% (n = 4) had low support, 33.3% (n = 5) had medium support and 40% (n = 6) had high support system. But in patients with absence of psychiatric illness – none had low support, 50% (n = 10) had medium support and 50% (n = 10) had high support system. This findings suggest statistically significant association between presence of psychiatric illness and low support system in patients undergoing

hemodialysis (chi square = 6.076; P = 0.048). This results were consistent with previous study done by Tezel A et al (2011).

48.6% patients undergoing hemodialysis were able to carry on with their normal activities as previously, 34.3% patients were unable to work but were able to live at home and care for most of their personal needs, 17.1% were unable to care for self, requires equivalent of hospital care. This can be explained as patients undergoing hemodialysis were in stage 5, severe end stage renal disease, undergoing dialysis 2 -3 times/week interferes with their functional ability. In observation with presence of psychiatric illness, 5 were able to carry out normal activities, 4 were unable to work but able to care for self and 6 were unable to care for self, requires equivalent of hospital care at home. In patients with absence of psychiatric illness 12 were able to carry their normal activities and 8 were unable to work but able to care for self. In this study statistical significance was observed with presence of psychiatric illness and low functional ability in patients undergoing hemodialysis (chi square = 6.121; P = 0.047). This finding is similar with C. P. Andrade et al (2012), who observed presence of psychiatric illness was associated with worse functional capacity in patients undergoing hemodialysis. Kalender et al., (2006)also indicated the association between depression and functional capacity and classified this association as one of the risk factors for mortality in dialysis patients.

Post renal transplantation

Among the patients in post renal transplantation treatment, mean age of study population was 33.51 ± 9.92 years. Mean age of renal disease diagnosis was 28.23 ± 9.632 years, most common cause for renal failure was systemic hypertension (31.4%). Prior to transplantation all were in stage 5 and post transplantation about 5.7% were in stage 2 renal failure. Mean serum creatinine level was 1.51 ± 0.780. Majority (91.4%) had undergone cadaver kidney transplantation. About 45.7% were in post renal transplantation treatment for more than 2 years. About 14.3% had medical comorbidity.

In this study 31.4% had psychiatric illness in post renal transplantation treatment. Among this 31.4% of patients with psychiatric illness - 45.5% had major depressive disorder, 27.3% had adjustment disorder, 9.1% had generalized anxiety disorder, 9.1% had illness anxiety disorder and 9% had psychosis. Whereas, in a study done by Kalman T P (1983)et al reported 46% of patients had psychiatric illness and study done by Pawar A A et al(2006) reported 56.7% major depressive disorder in post renal transplantation patients.

No statistical significance was observed with presence of psychiatric illness and socio demographic factors. In this study no chronic kidney disease related factors were statistically associated with presence of psychiatric illness.

In post renal transplantation group, about 74.3% had high treatment adherence, 22.9% had medium treatment adherence and 2.9% had low adherence. No statistical significance was observed with treatment adherence and presence or absence of psychiatric illness (chi square = 0.600; P = 0.742). 68.6% had high social support, 31.4% had medium support systems, no one was in low social support group. Among 11 patients with psychiatric illness, 3 were in high support group and 8 were in medium support group. Whereas in 24 patients with no psychiatric illness 21 were in high support system and 3 were in medium support system. Presence of psychiatric illness is associated with medium support system and absence of psychiatric illness is associated with high support system. This results were also statistically significant (chi square = 12.696; P = 0.000). All patients (100%) in post renal transplantation were able to carry their normal activity as that of premorbid level.

CONCLUSION

CONCLUSION

In this study, comparatively more young patients were in renal transplantation and hemodialysis treatment, whereas in conservative treatment majority were elder patients. Gender distribution was equal in all 3 groups. Comparatively patients in hemodialysis, renal transplantation were better educated than patients in conservative treatment. Regarding socio economic status, in conservative group and hemodialysis majority were in low socio economic status but in renal transplantation majority belonged to middle socio economic state. In all three groups majority were residing in urban area. In conservative treatment about $3/4^{th}$ was unemployed, considering age factor in conservative treatment unemployment can be explained. But in hemodialysis majority were in middle age adults and among them about $3/4^{th}$ were unemployed. In renal transplantation more than half of the study populations were employed. In all three groups majority were belonging to nuclear family. The most common cause for renal failure was systemic hypertension in all three groups. Glomerulonephritis also contributed significantly in hemodialysis and post renal transplantation patients. Medical comorbidity was more prevalent in patients on conservative treatment and hemodialysis than in post renal transplantation.

In this study, presence of psychiatric illnesses were high in conservative treatment (52.5%) than in patients undergoing hemodialysis (42.9%) than in patients in post renal transplantation (31.4%). Among the psychiatric illnesses major depressive disorder was the most common in all three groups. Family history of psychiatric illness had no correlation with presence of psychiatric illness. Treatment adherence, social support system and functional ability were better for patients on post renal transplantation than conservative treatment and hemodialysis.

To summarize

Statistically significant associations were observed between following variables in this study

1) Rural locality and presence of psychiatric illness in conservative treatment group

2) Joint family and presence of psychiatric illness in hemodialysis group

3) Low support system and presence of psychiatric illness in all three groups

4) Low functional ability and presence of psychiatric illness in hemodialysis group

5) Low treatment adherence and presence of psychiatric illness in hemodialysis group.

A high prevalence of psychiatric illnesses in patients with chronic kidney disease (42.7%) has been observed in this study and also in previous studies. Presence of psychiatric illnesses among chronic kidney disease is associated with low treatment adherence and reduced functional ability. Hence it becomes obvious that the presence of psychiatric illnesses in chronic kidney disease need to be effectively identified and managed

An effective liaison services between the physicians treating chronic kidney disease and psychiatric services can improve the outcome of chronic kidney disease and thereby improve the quality of life of patients with chronic kidney disease.

Limitations of the study

This study is a cross sectional observation study. Analytical study may provide more information regarding presence of psychiatric illnesses, social support system, treatment adherence and functional ability among various treatment groups.

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BIBLIOGRAPHY

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ANNEXURE

INFORMED CONSENT FORM

STUDY: "Psychiatric morbidity in patients with Chronic Kidney Disease: a cross sectional study".

STUDY CENTRE: Department of Nephrology, Govt. Kilpauk Medical College Hospital.

PATIENT'S NAME :

PATIENT'S AGE :

I.P NO. :

Patient may check ( ) these boxes

I confirm that I understood the purpose of the procedure for the above study. ( )

I had the opportunity to ask question and all my questions and doubts have been answered to my complete satisfaction. ( )

I understand that my participation in the study is voluntary and that I am free to withdraw at any time without giving reason, without my legal rights being affected. ( )

I understand that the ethical committee members and the regulatory authorities will not need my permission to look at my health records, both in respect of the current study and any further research that may be conducted in relation to it, even if I withdraw from the study I agree to this access. ( )

However, I understand that my identity will not be revealed in any information released to third parties or published, unless as required under the law. ( )

I agree not to restrict the use of any data or results that arise from the study. ( )

I agree to take part in the above study and to comply with the instructions given during the study and faithfully co-operate with the study team and to immediately inform the study staff if I suffer from any deterioration in my health or well being or any unexpected or unusual symptoms.( )

I hereby consent to participate in this study. ( )

I hereby give permission to undergo complete clinical examination and diagnostic tests including hematological, biochemical, radiological tests.

( )

Signature / thumb impression

Patient’s name and address:

Place:

Date:

Signature of the investigator:

Study investigator’s name:

Place:

Date:

PARTICIPANTS' INFORMATION SHEET

Investigator : Dr. M. Tamilselvi

Name of the participant :

Study title: "Psychiatric morbidity in patients with Chronic Kidney Disease: a cross sectional study".

You are invited to take part in this research study. We have got approval from the IEC. You are asked to participate because you satisfy the eligibility criteria.

What is the purpose of this research?

In this study, we aim to assess the prevalence of psychiatric illnesses in patients with Chronic Kidney Disease, the association between psychiatric comorbidity and different sociodemographic factors and disease related factors, to assess the relationship between psychiatric comorbidity and support system, functional level, treatment adherence. This will help in assessing the burden of psychiatric illnesses in people with chronic kidney disease and how it affects the outcome of illness, so that earlier detection and treatment of psychiatric illnesses may improve the outcome of chronic kidney disease.

Benefits:

This study will benefit all people who are undergoing treatment for chronic kidney disease and help improve the success rate of chronic kidney disease treatment, and also improves their quality of life.

Discomforts and risks:

No interventional procedure is done in this study.

Confidentiality:

Patients who participate in the study and their details will be maintained confidentially and at any cost, those details will not be let out.

Right to withdraw:

Patients will not be forced to complete the study. At any cost, in such circumstances the treatment will not be compromised.

Signature/Thumb impression of the participant:

Signature of the investigator:

Date :

Place:

சுய ஒப்புதல் படிவம்

ஆய்வு செய்யப்படும் தலைப்பு:

"நாள்பட்ட சிறுநீரக நோய் உள்ளவர்களிடம் இருக்கும் மனநோய்களைக் குறித்த ஆராய்ச்சி."

ஆராய்ச்சி நிலையம்: சிறுநீரகப்பிரிவு , கீழ்ப்பாக்கம் மருத்துவக்கல்லூரி அரசு மருத்துவமனை, சென்னை.

பங்கு பெறுபவரின் பெயர்:

உறவு முறை:

பங்கு பெறுபவரின் எண்:

பங்கு பெறுபவர் இதனை ( ) குறிக்கவும்

மேலே குறிப்பிட்டுள்ள மருத்துவ ஆய்வின் விவரங்கள் எனக்கு விளக்கப்பட்டது. என்னுடைய சந்தேகங்களைக் கேட்கவும், அதற்கான தகுந்த விளக்கங்களைப் பெறவும் வாய்ப்பளிக்கப்பட்டது. ( )

நான் இவ்வாய்வில் தன்னிச்சையாகத்தான் பங்கேற்கிறேன். எந்தக் காரணத்தினாலோ எந்தக் கட்டத்திலும் எந்த சட்ட சிக்கலுக்கும் உட்படாமல் நான் இவ்வாய்வில் இருந்து விலகிக் கொள்ளலாம் என்றும் அறிந்து கொண்டேன்.

( )

இந்த ஆய்வு சம்மந்தமாகவும், மேலும் இது சார்ந்த ஆய்வு மேற்கொள்ளும்போதும், இந்த ஆய்வில் பங்குபெறும் மருத்துவர் என்னுடைய மருத்துவ அறிக்கைகளைப் பார்ப்பதற்கு என் அனுமதி தேவையில்லை என அறிந்துகொள்கிறேன். நான் ஆய்வில் இருந்து விலகிக் கொண்டாலும் இது பொருந்தும் என அறிகிறேன். (

( )

இந்த ஆய்வின் மூலம் கிடைக்கும் தகவல்களையும், பரிசோதனை முடிவுகளையும் மற்றும் சிகிச்சை தொடர்பான தகவல்களையும் மருத்துவர் மேற்கொள்ளும் ஆய்வில் பயன்படுத்திக் கொள்ளவும், அதைப் பிரசுரிக்கவும் என் முழு மனதுடன் சம்மதிக்கிறேன்.

( )

இந்த ஆய்வில் பங்கு கொள்ள ஒப்புக்கொள்கிறேன். எனக்குக் கொடுக்கப்பட்ட அறிவுரைகளின் படி நடந்துகொள்வதுடன், இந்த ஆய்வை மேற்கொள்ளும் மருத்துவ அணிக்கு உண்மையுடன் இருப்பேன் என்றும் உறுதியளிக்கிறேன். என் உடல் நலம் பாதிக்கப்பட்டாலோ அல்லது எதிர்பாராத வழக்கத்திற்கு மாறாக நோய்க்குறி தென்பட்டாலோ உடனே அதை மருத்துவ அணியிடம் தெரிவிப்பேன் என உறுதி அளிக்கிறேன்.

( )

இந்த ஆய்வில் எனக்கு மருத்துவப் பரிசோதனை செய்து கொள்ள மற்றும் ஆய்வில் பங்கேற்க நான் முழு மனதுடன் சம்மதிக்கிறேன்.

( )

பங்கேற்பவரின் கையொப்பம் / கட்டைவிரல் ரேகை:

_____

இடம்: _____

தேதி: _____

பங்கேற்பவரின் பெயர் மற்றும் விலாசம்::

ஆய்வாளரின் கையொப்பம் _____

இடம் _____

தேதி _____

ஆய்வாளரின் பெயர் _____

ஆராய்ச்சி தகவல் தாள்

கிழ்பாக்கம் அரசு பொது மருத்துவமனையில் நாள்பட்ட சிறுநீரக நோய் உள்ளவர்களிடம் இருக்கும் மனநோய்களைக் குறித்து ஆராய்ச்சி செய்ய உள்ளோம். நீங்கள் இந்த ஆராய்ச்சியில் பங்கேற்க நாங்கள் விரும்புகிறோம். இந்த ஆராய்ச்சியில் பங்கேற்பதால் தங்களது நோயின் ஆய்வறிக்கையோ அல்லது சிகிச்சையோ பாதிக்கப்படாது என்பதையும் தெரிவித்துக் கொள்கிறோம்.

இந்த ஆராய்ச்சியின் முடிவுகளை அல்லது கருத்துகளை வெளியிடும் போதோ அல்லது ஆராய்ச்சியின் போதோ தங்களது பெயரையோ அல்லது அடையாளங்களையோ வெளியிடமாட்டோம் என்பதையும் தெரிவித்துக் கொள்கிறோம்.

இந்த ஆராய்ச்சியில் பங்கேற்பது தங்களுடைய விருப்பத்தின் பேரில் தான் இருக்கிறது. மேலும் நீங்கள் எந்நேரமும் இந்த ஆராய்ச்சியில் இருந்து பின்வாங்கலாம் என்பதையும் தெரிவித்துக்கொள்கிறோம்.

இந்த சிறப்புப் பரிசோதனைகளின் முடிவுகளை ஆராய்ச்சியின் போதோ அல்லது ஆராய்ச்சியின் முடிவின் போதோ தங்களுக்கு அறிவிப்போம் என்பதையும் தெரிவித்துக்கோள்கிறோம்.

ஆராய்ச்சியாளர் கையொப்பம் பங்கேற்பாளர் கையொப்பம்

தேதி:

MASTER CHART

s.no	age in yrs	sex	educ	SES	relig	locality	occu	marital	family type	family h/o	age at diagnosis (yrs)	cause RF	RF stage	treatment	donar type	post ts dura	dialysis dura	dura of Rx	co-morbid	creatine	psychia illness	type of illness	severity	moca	adherence	mspss	kps
1	61	1	3	2	3	2	1	2	1	1	60	2	3	1				1	2	4	1	-	-	24	2	2	1
2	72	1	2	4	1	2	1	2	1	1	71	3	2	1				1	2	2.1	2	ient disorder with depresse	1	20	1	2	1
3	65	1	3	3	1	2	1	2	1	1	59	2	3	1				6	2	2.7	1	-	-	22	1	3	1
4	60	2	2	4	1	2	1	2	2	2	52	2	2	1				8	2	1.5	2	dep	2	19	2	1	1
5	62	1	2	3	1	2	1	2	2	1	54	1	2	1				8	2	1.7	1	-	-	22	2	3	2
6	51	1	3	3	3	1	1	2	1	1	50	1,2	2	1				1	2	1.9	2	sch	2	15	3	1	2
7	65	2	1	5	1	2	1	3	1	2	60	1,2	5	1				5	2	4	2	dep	2	17	2	2	2
8	35	1	3	3	2	2	2	2	1	1	31	3	3	1				4	1	2.5	1	-	-	25	2	2	2
9	61	2	1	3	1	2	1	2	2	1	58	2	2	1				3	1	1.5	1	-	-	20	1	2	2
10	60	2	2	4	3	2	1	3	2	1	57	1	3	1				3	1	1.4	2	dep	3	16	3	1	2
11	55	2	1	5	3	2	2	3	1	1	52	2	3	1				3	2	3.4	2	dep with psy symptoms	3	19	2	1	1
12	54	1	3	4	1	2	1	2	1	2	53	5	3	1				1	1	2.2	2	ads	2	28	1	2	1
13	64	1	2	4	1	2	2	2	1	1	62	1	4	1				2	1	3	1	-	-	13	1	3	1
14	65	1	2	5	1	2	1	2	1	2	64	4	4	1				1	1	2.3	2	ient disorder with depresse	2	23	1	2	2
15	57	2	2	5	1	2	1	2	1	1	55	5	4	1				2	1	1.6	1	-	-	17	1	3	1
16	48	1	3	3	1	2	4	2	1	1	41	2	4	1				7	2	2.9	2	ient disorder with depresse	2	20	2	2	1
17	58	2	2	4	3	2	1	2	2	1	56	5	3	1				2	1	1.8	1	-	-	18	2	3	1
18	57	1	3	5	1	2	1	2	1	2	50	2	5	1				7	2	5.2	2	ads	3	27	3	3	1
19	68	2	2	4	1	2	1	2	2	1	64	1,2	3	1				4	1	2.4	2	ads	2	18	1	2	1
20	65	2	1	5	1	2	1	3	1	1	60	2	4	1				5	1	3.6	2	dep	2	14	2	1	1
21	42	2	3	4	1	2	1	2	1	1	42	3	3	1				1	1	2.6	1	-	-	22	1	3	1
22	54	2	2	5	1	2	1	2	1	1	48	1,2	5	1				6	1	7	2	dep	1	18	1	3	1
23	63	1	2	5	1	2	1	3	1	1	62	1	3	1				1	1	2.9	1	-	-	18	1	3	1
24	55	2	3	4	1	2	1	2	1	1	47	3	5	1				1	1	2.9	1	-	-	19	1	2	1
25	49	1	2	5	1	1	2	2	1	1	41	1	5	1				8	1	6.6	2	ads	3	21	1	3	1
26	57	1	3	4	1	2	1	2	1	1	54	4	5	1				3	2	5	1	-	-	18	2	1	1
27	48	2	2	3	1	2	1	2	1	1	46	4	2	1				2	1	1.4	1	-	-	22	1	3	1
28	59	2	3	4	1	2	1	3	2	1	57	2	3	1				2	2	1.9	1	-	-	21	1	3	1
29	68	2	2	4	1	2	1	3	1	1	67	1,2	3	1				1	1	1.9	1	-	-	19	1	2	1
30	48	2	2	4	1	2	1	2	1	1	45	1,2	3	1				3	1	2.1	2	illness anxiety	3	22	1	3	1
31	42	2	3	3	1	2	3	2	1	1	39	4	3	1				3	1	1.9	2	dep	2	22	2	1	1
32	70	1	2	4	1	1	1	2	1	1	65	1,2	2	1				5	1	1.9	2	ads	3	18	1	2	1
33	72	2	1	4	1	2	1	3	1	1	69	2	3	1				3	1	1.9	1	-	-	18	1	3	1
34	62	1	3	2	3	2	1	2	1	1	61	2	3	1				1	2	4	1	-	-	24	2	2	1
35	73	1	2	4	1	2	1	2	1	1	72	3	2	1				1	2	2.1	2	ient disorder with depresse	2	20	1	2	1
36	63	1	3	3	1	2	1	2	1	1	57	2	3	1				6	2	2.7	1	-	-	22	1	3	1
37	61	2	2	4	1	2	1	2	2	2	53	2	2	1				8	2	1.5	2	dep	2	19	2	1	1
38	65	1	2	3	1	2	1	2	2	1	57	1	2	1				8	2	1.7	1	-	-	22	2	3	2
39	53	1	3	3	3	1	1	2	1	1	52	1,2	2	1				1	2	1.9	2	sch	3	15	3	1	2
40	66	2	1	5	1	2	1	3	1	2	61	1,2	5	1				5	2	4	2	dep	2	17	2	2	2
41	48	2	3	3	1	1	2	2	1	1	42	2	5	3	1	4		6	1	1.5	1	-	-	20	1	3	1

42	25	1	3	4	1	2	2	1	1	2	19	5	5	3	1	6		8	1	1.2	1	-	-	26	1	3	1
43	34	2	3	3	1	2	1	2	1	1	26	2	5	3	1	6		8	1	1.5	2	ient disorder with depresse	2	25	2	3	1
44	27	2	4	4	1	1	1	1	1	1	25	1	5	3	1	1		2	2	0.9	1	-	-	29	1	3	1
45	36	2	4	3	1	2	1	2	1	1	28	5	5	3	1	6		8	1	1.6	2	psychosis	2	30	1	2	1
46	45	1	3	4	1	2	2	2	1	1	35	2	5	3	2	2		10	1	1.3	1	-	-	21	2	2	1
47	33	1	2	5	1	1	1	2	2	2	29	3	5	3	1	2		4	2	1.2	1	-	-	19	1	3	1
48	38	2	3	3	1	2	4	2	1	1	34	2	5	3	2	1		4	2	1	2	dep	1	22	1	2	1
49	46	1	4	3	1	2	3	2	1	1	40	3	5	3	1	5		6	1	1.2	2	ent disorder with anxiety sy	2	29	1	2	1
50	22	2	4	3	1	2	4	1	1	2	16	3	5	3	1	4		6	2	1.9	2	anxiety	2	26	2	3	1
51	34	1	3	3	1	1	3	2	2	2	28	1	5	3	1	4		6	1	1.2	1	-	-	21	1	3	1
52	20	1	3	3	1	2	1	1	2	1	17	5	5	3	1	2		3	1	1.1	2	anxiety	3	14	1	3	1
53	28	1	4	3	1	2	4	1	1	1	25	4	5	3	1	1		3	1	1	1	-	-	30	1	2	1
54	33	1	1	4	1	1	2	2	2	1	31	4	5	3	1	1		2	1	1	2	ient disorder with depresse	2	20	1	2	1
55	41	1	2	4	1	2	3	2	2	1	40	1,2	5	3	1	1		1	2	1.4	1	-	-	26	1	3	1
56	31	1	4	3	2	2	5	2	2	1	27	3	5	3	1	3		4	1	1.8	1	-	-	25	1	2	1
57	19	2	3	5	3	2	1	2	1	2	17	4	5	3	1	1		2	1	1	2	dep	3	26	2	2	1
58	41	2	4	2	1	2	1	2	1	1	35	2	5	3	2	1		6	1	1	1	-	-	23	1	3	1
59	24	2	3	2	1	2	1	2	2	1	16	5	5	3	1	6		8	1	1.1	1	-	-	25	2	3	1
60	50	1	4	2	1	1	3	2	1	1	45	1	5	3	1	2		5	1	1.1	1	-	-	27	1	3	1
61	21	1	3	4	1	2	2	1	1	1	18	2	5	3	1	2		3	1	3.2	1	-	-	24	1	3	1
62	31	2	3	4	2	2	1	2	1	1	27	4	5	3	1	2		4	1	1	1	-	-	24	2	3	1
63	52	1	3	3	1	2	4	2	1	1	44	2	5	3	1	5		8	1	1.3	1	-	-	23	1	3	1
64	35	1	3	4	1	2	1	2	1	1	32	3	5	3	1	1		3	1	1.2	2	dep	2	27	1	2	1
65	24	2	4	3	1	1	1	2	1	1	16	3	5	3	1	6		8	1	4	2	dep	2	29	1	2	1
66	29	2	3	3	3	1	1	2	2	2	19	2	5	3	1	8		10	1	3.2	1	-	-	26	3	3	1
67	34	1	4	2	1	1	5	1	1	1	28	2	5	3	1	6		8	1	2.8	1	-	-	29	1	3	1
68	24	1	3	4	1	2	3	2	1	1	20	5	5	3	1	2		4	1	1.4	1	-	-	27	1	3	1
69	32	2	2	2	1	2	2	2	1	1	24	3	5	3	1	4		6	1	1	1	-	-	25	1	3	1
70	22	2	3	2	1	2	1	2	2	1	14	5	5	3	1	6		8	1	1.1	1	-	-	25	2	3	1
71	53	1	4	2	1	1	3	2	1	1	48	1	5	3	1	2		5	1	1.1	1	-	-	27	1	3	1
72	22	1	3	4	1	2	2	1	1	1	19	2	5	3	1	2		3	1	3.2	1	-	-	24	1	3	1
73	32	2	3	4	2	2	1	2	1	1	28	4	5	3	1	2		4	1	1	1	-	-	24	2	3	1
74	51	1	3	3	1	2	4	2	1	1	43	2	5	3	1	5		8	1	1.3	1	-	-	23	1	3	1
75	36	1	3	4	1	2	1	2	1	1	33	3	5	3	1	1		3	1	1.2	2	dep	2	27	1	2	1
76	60	2	2	5	1	2	1	2	1	1	57	1,2	5	2	-	-	1	3	1	6.9	1	-	-	18	1	2	1
77	68	2	1	5	1	2	1	3	2	2	65	5	5	2	-	-	2	3	1	3.6	2	dep	2	16	3	1	1
78	55	1	2	4	1	2	1	2	1	1	52	4	5	2	-	-	1	3	1	3.2	1	-	-	18	1	2	1
79	26	1	4	4	1	1	1	1	2	1	25	3	5	2	-	-	1	1	1	8	2	ient disorder with depresse	1	28	2	3	1
80	24	2	4	3	1	2	1	3	1	2	20	3	5	2	-	-	2	4	1	9.1	1	-	-	23	2	2	3
81	36	1	3	5	3	2	1	2	1	1	34	5	5	2	-	-	1	2	1	6.7	1	-	-	26	2	2	3
82	40	1	2	5	1	2	4	2	1	1	37	2	5	2	-	-	1	3	1	8	2	ads	2	26	1	2	1
83	60	1	1	5	1	2	1	2	1	2	52	2	5	2	-	-	2	8	2	4.2	2	ient disorder with depresse	1	18	1	2	1
84	57	1	2	4	1	1	1	2	1	1	53	2	5	2	-	-	2	4	1	6.1	2	ient disorder with depresse	3	19	1	3	1
85	50	2	2	3	2	2	1	2	1	1	46	2	5	2	-	-	2	4	1	3.8	1	-	-	11	1	3	1
86	65	1	4	4	2	2	1	2	1	1	61	1	5	2	-	-	2	4	1	8	1	-	-	23	1	3	1
87	18	2	3	5	1	2	1	1	1	1	16	5	5	2	-	-	1	2	2	4.2	1	-	-	23	2	2	3
88	25	1	4	2	1	2	5	2	1	1	24	2	5	2	-	-	1	1	1	5.6	2	ient disorder with depresse	1	28	2	3	2
89	31	2	2	3	1	2	1	2	1	1	30	3	5	2	-	-	1	1	1	9	1	-	-	13	1	3	2

90	30	2	2	4	2	1	2	2	2	1	25	2	5	2	-	-	5	5	2	10	2	dep	3	16	3	1	2
91	38	1	3	3	1	2	3	1	1	1	36	4	5	2	-	-	2	2	2	3.8	1	-	-	17	1	3	1
92	33	2	3	4	2	2	1	2	1	1	29	4	5	2			2	4	1	1	1	-	-	24	2	3	1
93	52	1	3	3	1	2	4	2	1	1	44	2	5	2			1	8	1	1.3	1	-	-	23	1	3	1
94	34	1	3	4	1	2	1	2	1	1	31	3	5	2			1	3	1	1.2	2	dep	2	27	1	2	1
95	61	2	2	5	1	2	1	2	1	1	58	1,2	5	2	-	-	1	3	1	6.9	1	-	-	18	1	2	1
96	65	2	1	5	1	2	1	3	2	2	62	5	5	2	-	-	2	3	1	3.6	2	dep	2	16	3	1	1
97	53	1	2	4	1	2	1	2	1	1	50	4	5	2	-	-	1	3	1	3.2	1	-	-	18	1	2	1
98	22	1	4	4	1	1	1	1	2	1	21	3	5	2	-	-	1	1	1	8	2	ient disorder with depresse	1	28	2	3	1
99	28	2	4	3	1	2	1	3	1	2	24	3	5	2	-	-	2	4	1	9.1	1	-	-	23	2	2	3
100	34	1	3	5	3	2	1	2	1	1	32	5	5	2	-	-	1	2	1	6.7	1	-	-	26	2	2	3
101	40	1	2	5	1	2	4	2	1	1	37	2	5	2	-	-	1	3	1	8	2	ads	3	26	1	2	1
102	60	1	1	5	1	2	1	2	1	2	56	2	5	2	-	-	2	4	2	4.2	2	ient disorder with depresse	1	18	1	2	1
103	55	1	2	4	1	1	1	2	1	1	51	2	5	2	-	-	2	4	1	6.1	2	ient disorder with depresse	1	19	1	3	1
104	51	2	2	3	2	2	1	2	1	1	47	2	5	2	-	-	2	4	1	3.8	1	-	-	11	1	3	1
105	64	1	4	4	2	2	1	2	1	1	60	1	5	2	-	-	2	4	1	8	1	-	-	23	1	3	1
106	19	2	3	5	1	2	1	1	1	1	17	5	5	2	-	-	1	2	2	4.2	1	-	-	23	2	2	3
107	24	1	4	2	1	2	5	2	1	1	23	2	5	2	-	-	1	1	1	5.6	2	ient disorder with depresse	2	28	2	3	2
108	32	2	2	3	1	2	1	2	1	1	31	3	5	2	-	-	1	1	1	9	1	-	-	13	1	3	2
109	37	2	2	4	2	1	2	2	2	1	32	2	5	2	-	-	4	5	2	10	2	dep	3	16	3	1	2
110	34	1	3	3	1	2	3	1	1	1	32	4	5	2	-	-	2	2	2	3.8	1	-	-	17	1	3	1